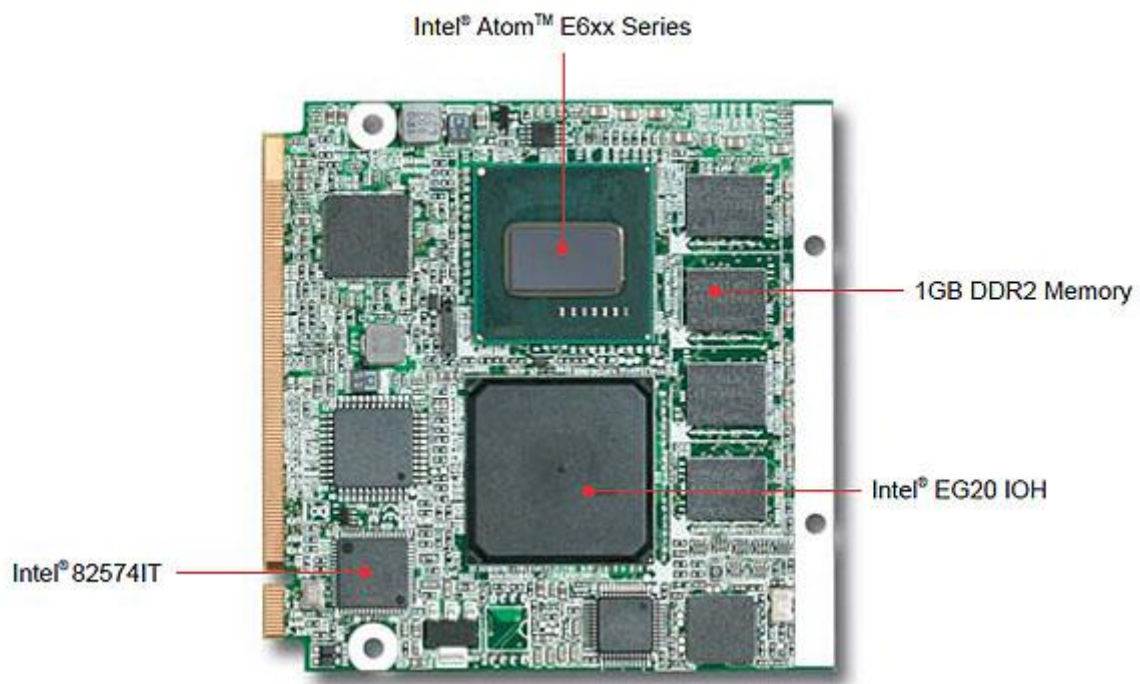


PQ7-M105IT Series

User's Manual



Version 1.2

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Appendix A

Appendix B

How to Use This Manual

The manual describes how to configure your PQ7-M105IT series to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of this Q_{SEVEN} Module.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2 : Hardware Configuration. Describes the definition and location for Jumpers that you can easily configure your system.

Chapter 3 : System Installation. Describes the CPU, main memory SKU to get a clear information.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

Chapter 5 : Troubleshooting. A quickly guide to start up your system development.

The content of this manual and EC declaration document is subject to change without prior notice. These changes will be incorporated in new editions of the document. **Portwell** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions will be shown on the following web site : <http://www.portwell.com.tw>

Chapter 1

System Overview

1.1 Introduction

Q_{SEVEN}, a new industrial computer platform in “Module board” and “Carrier board” architecture, equipped processor or its socket, chipset, memory or memory socket and single Ethernet controller on it. The On-The-Shelf Module board allows users to create their own Carrier board easily and quickly since most critical parts are ready on Module board. Q_{SEVEN} Module board offers expansion interfaces such as PCI Express, SATA, LPC, LVDS, USB, SDVO and Audio etc. that could support variety functions depending on Carrier board design.

The Carrier board was customized design to fit in different mechanical requirements. In the meanwhile, its variety functions were also customized to meet the application. Compares to the platform that designed from nothing, Q_{SEVEN} architecture platform only needs to develop Carrier board. Users could keep their know-how which related to their core competence in the Carrier board.

PQ7-M105IT series equipped Intel Tunnel Creek chipset with Atom E680T /E660T /E640T /E620 processor on-board), 512 MB DDR2 memories (up to 2GB) on-board, one Gigabit Ethernet controller on it to provide expansion interfaces – PCI Express x1.

1.2 Check List

The PQ7-M105IT series package should cover the following basic items

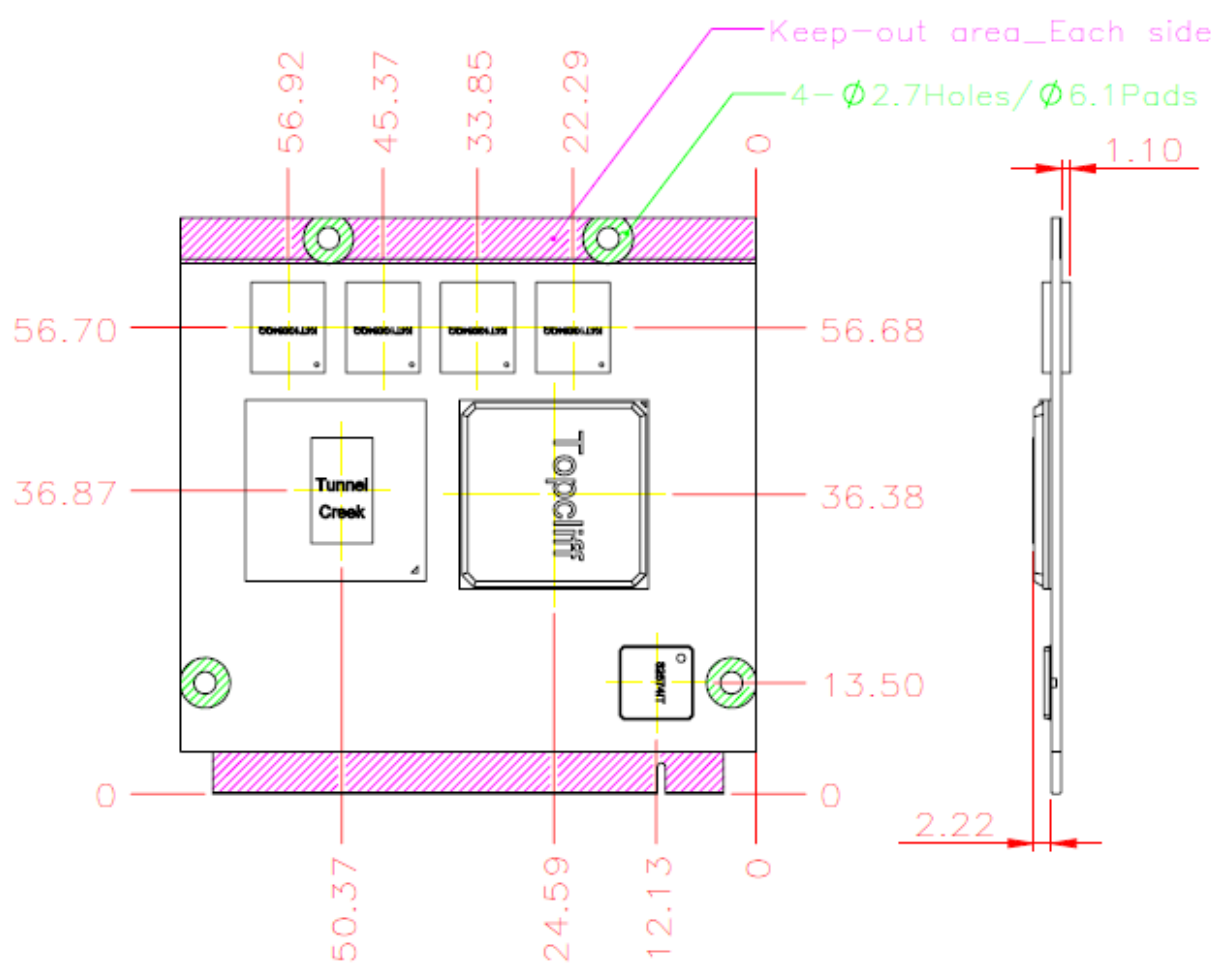
One PQ7-M105IT series module board

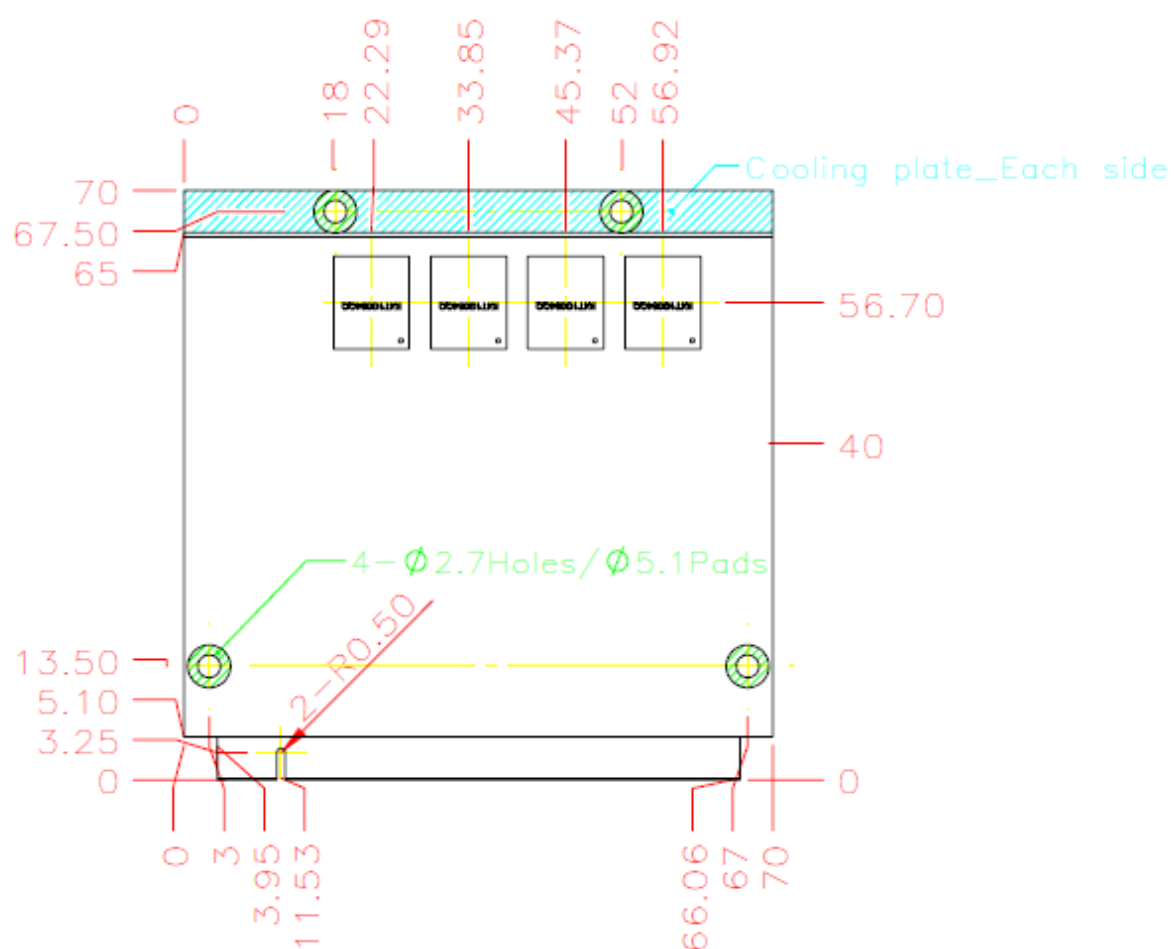
If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

1.3 Product Specification

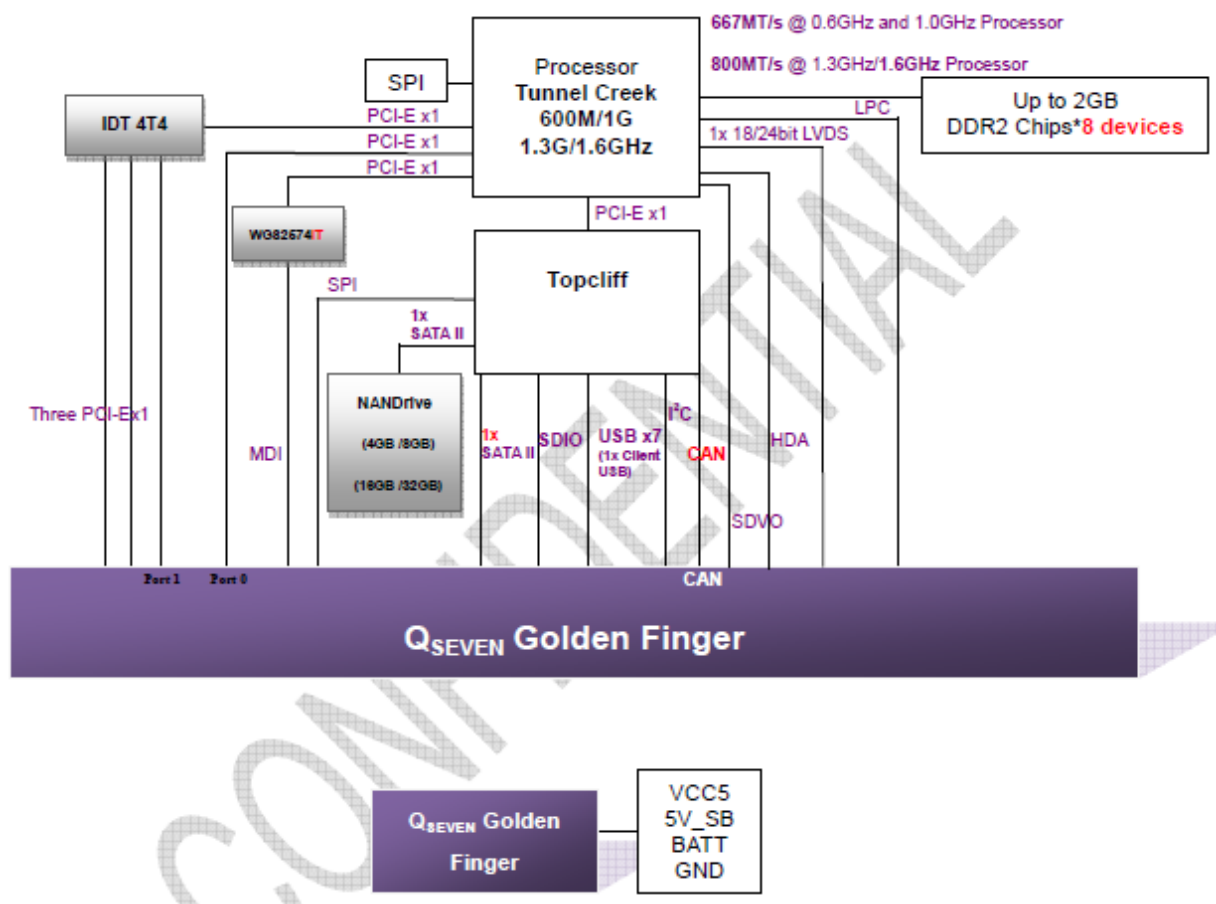
- **Main processor**
 - Intel® Atom Processor E680T/E660T/E640T/E620
- **Main Memory**
 - Onboard DDR2 800 up to 2GB
- **L2 Cache Memory**
 - 512K L2 Cache, Build-in processor
- **Chipset**
 - Intel EG20T chipset
- **Expansion Interfaces**
 - PCI Express
 - ♦ Four PCI Express x1 links
 - LVDS
 - ♦ Supports maximum 80MHz single channel LVDS interface
 - ♦ Single channel LVDS interface support: 24 bpp
 - ♦ Maximum Panel resolution supported up to 1280 x 768
 - SDVO (Serial Digital Video Output)
 - ♦ A maximum pixel clock of 160 MHz is supported on the SDVO interface.
 - Ethernet
 - ♦ Intel 82574IT Gigabit Ethernet controller is equipped
 - USB Interface
 - ♦ Support eight USB 2.0 ports
 - SATA Interface
 - ♦ **Support Two SATA ports with 3-Gbps Generation 2 and AHCI.**
 - ♦ **Option NANDrive storage onboard, up to 32GB capacity.**
- **Outline Dimension (L X W):**
 - 70mm x 70mm
- **Operating Temperature:**
 - 40°C ~ 85°C
- **Storage Temperature:**
 - 40°C ~ 85°C
- **Relative Humidity:**
 - 5% ~ 90%, non-condensing

1.4 Mechanical Drawing





1.5 System Architecture



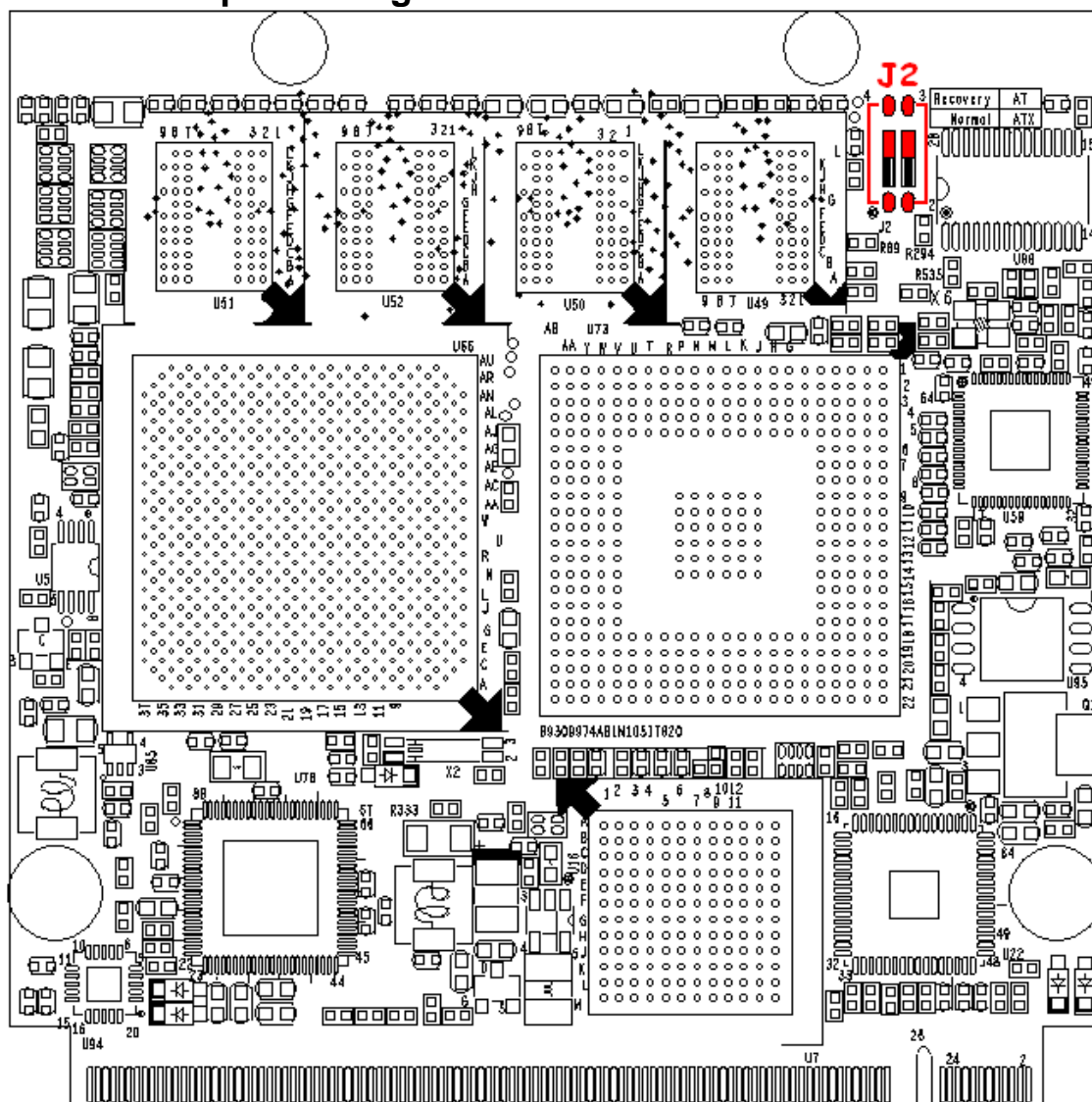
PQ7-M105IT Series System Block Diagram

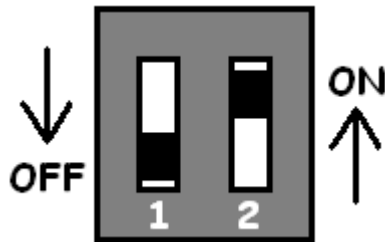
Chapter 2

Hardware Configuration

This chapter gives the definitions and shows the positions of jumpers, headers and connector. The default settings shipped from factory are marked (★).

2.1 Jumper Setting



J2: BIOS Recovery select and AT ATX select**J2 : BIOS Recovery select and AT ATX select**

JP7	Process Selection
1 : ON	BIOS recovery
1 : OFF	Normal Operation★
2 : ON	Auto power up
2 : OFF	Need Power Button to boot up★

2.2 Jumper Setting of Portwell EVB Carrier

This section is the configuration jumpers on Portwell EVB Carrier. PQ7-M105IT is in the proper position.

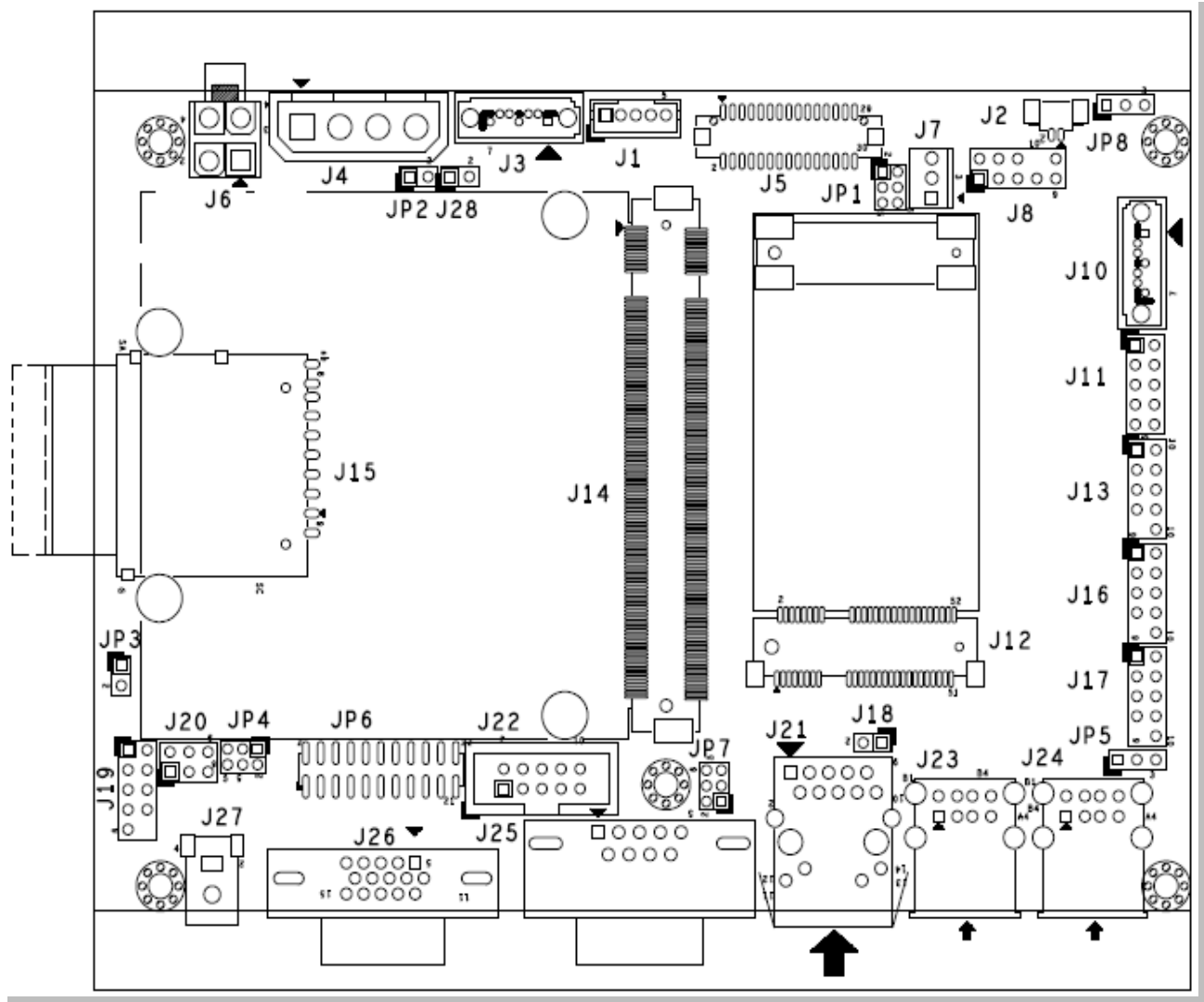


Figure 2-1 PQ7-M105IT Jumper & Connector Location

JP1 : LVDS Power Level

JP1	Process Selection
1-3	3.3V ★
3-4	12V
3-5	5V

JP2 : CPU Board BIOS Disable

JP2	Function
1-2	BIOS Disable

JP3 : Auto Power Button selection

JP3	Function
1-2	Auto power button mode

JP4 : RTC CMOS Clear Jumper Setting

JP4	Function
1-3 、 2-4	For com port ★
3-5 、 4-6	For IrDA

JP5 : USB Host/Client Select

JP5	Function
1-2	Host ★
2-3	Client

JP6 : COM2 RS232/485/422 Selection

JP6	Function
RS232	5-6,9-11,10-12,15-17,16-18 ★
RS485	1-2,7-9,8-10,19-20
RS422	3-4,7-9,8-10,13-15,14-16,21-22

JP7 : LVDS Back-light Power Level

JP7	Process Selection
1-3,2-4	5V, Active High ★
1-3,4-6	12V, Active High
3-5,2-4	5V, Active Low
3-5,4-6	12V, Active Low

JP8 : CMOS Reset

JP8	Function
1-2	Normal Operation ★
2-3	Clear CMOS Contents

2.3 Connector Allocation of Portwell EVB Carrier

I/O peripheral devices are connected to the interface connectors.

Connector Function List

Connector	Function	Remark
J1	LVDS Panel Back-light Power Connector	
J2	RTC Battery Connector	
J3/10	SATA Interface Connector	
J4	Power Header	
J5	LVDS Connector	
J6	4P Power Connector for 12V	
J7	3P FAN Power Connector (System)	
J8	Audio Header	
J11	8-Bit GPIO Header	
J12	Mini-PCI E Connector	
J13	LPC Debug Port	
J14	MXM Connector	
J15	SD Card Slot	
J16	Dual Port USB Header (Only USB2.0 Device)	
J17	Client USB Header	
J19	Front Panel Control Header	
J20	IrDA Connector	
J21	RJ45 Lan Port	
J22	COM2 Serial Port BOX Header	
J23/J24	Dual Port USB	
J25	COM 1 Serial Port Connector	
J26	D-Sub15 VGA Connector	
J27	DC Jack 12V	
J28	Reserve Header	

Pin Assignments of Connectors

J1 : LVDS Panel Back-light Power Connector

PIN No.	Signal Description
1	Backlight Power
2	Ground
3	+12V
4	L_BKLTCTL
5	+5V

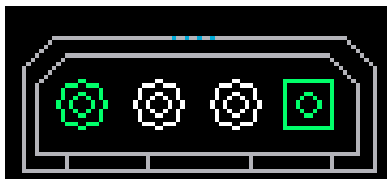
J2 : RTC Battery Connector

PIN No.	Signal Description
1	Positive
2	Negative

J3/10 : SATA Interface Connector

PIN No.	Signal Description	
1	GND	GND
2	SATA_TXP0	SATA_TXP1
3	SATA_TXN0	SATA_TXN1
4	GND	GND
5	SATA_RXN0	SATA_RXN1
6	SATA_RXP0	SATA_RXP1
7	GND	GND

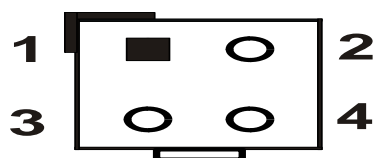
J4 : Power Header



PIN No.	Signal Description
1	V12
2	GND
3	GND
4	VCC

J5 : LVDS Panel Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	VDD_LVDS	2	VDD_LVDS
3	DF_LA_DATA+0	4	DF_LA_DATA-0
5	DF_LA_DATA+1	6	DF_LA_DATA-1
7	DF_LA_DATA+2	8	DF_LA_DATA-2
9	DF_LA_DATA+3	10	DF_LA_DATA-3
11	DF_LA_CLK+	12	DF_LA_CLK-
13	L_CTLA_CLK	14	L_CTLB_DATA
15	GND	16	GND
17	DF_LB_DATA+0	18	DF_LB_DATA-0
19	DF_LB_DATA+1	20	DF_LB_DATA-1
21	DF_LB_DATA+2	22	DF_LB_DATA-2
23	DF_LB_DATA+3	24	DF_LB_DATA-3
25	DF_LB_CLK+	26	DF_LB_CLK-
27	N/A	28	N/A
29	GND	30	GND

J6 : 4P Power Connector for 12V

PIN No.	Signal Description
1	Ground
2	Ground
3	+12V
4	+12V

J7 : 3P FAN Power Connector

PIN No.	Signal Description
1	Ground
2	+12V
3	Fan Speed Detecting signal

J8 : Audio Header

PIN No.	Signal Description
1	CN_MIC-R
2	AGND
3	CN_MIC-L
4	AGND
5	CN_LINOUT-R
6	NC
7	VCC
8	
9	CN_LINOUT-L
10	NC

J11 : 8-Bit GPIO Header

PIN No.	Signal Description	PIN No.	Signal Description
1	SIO_GPIO0	2	SIO_GPIO4
3	SIO_GPIO1	4	SIO_GPIO5
5	SIO_GPIO2	6	SIO_GPIO6
7	SIO_GPIO3	8	SIO_GPIO7
9	Ground	10	VCC

J12 : Mini-PCIE Slot

PIN No.	Signal Description	PIN No.	Signal Description
1	PCIE_WAKE#	2	VCC3
3	N/C	4	GND
5	N/C	6	VCC1_5
7	CLKREQ#	8	N/C
9	GND	10	N/C
11	DF_CLK_PCIE#	12	N/C
13	DF_CLK_PCIE	14	N/C
15	GND	16	N/C
17	N/C	18	GND
19	N/C	20	N/C
21	GND	22	RST#
23	DF_PCIE_RXN1	24	3.3VAUX
25	DF_PCIE_RXP1	26	GND
27	GND	28	VCC1_5
29	GND	30	SMB_CLK
31	DF_PCIE_TXN1	32	SMB_DAT
33	DF_PCIE_TXP1	34	GND
35	GND	36	DF_USB_PN0
37	N/C	38	DF_USB_PP0

39	N/C	40	GND
41	N/C	42	N/C
43	N/C	44	N/C
45	N/C	46	N/C
47	N/C	48	VCC1_5
49	N/C	50	GND
51	N/C	52	VCC3

J13 : LPC Debug Port

PIN No.	Signal Description	PIN No.	Signal Description
1	LPC_AD0	2	VCC3
3	LPC_AD1	4	RST#
5	LPC_AD2	6	LPC_FRAME#
7	LPC_AD3	8	CLK_LPC_FWH
9		10	GND

J14 : MXM Connector

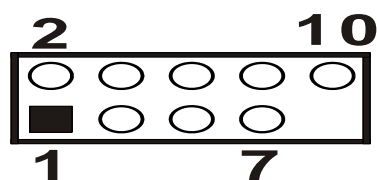
PIN No.	Signal Description	PIN No.	Signal Description
1	GND	2	GND
3	DF_LAN1_MDIN3	4	DF_LAN1_MDIN2
5	DF_LAN1_MDIP3	6	DF_LAN1_MDIP2
7	LAN1_LINK100-	8	LAN1_LINK1000-
9	DF_LAN1_MDIN1	10	DF_LAN1_MDIN0
11	DF_LAN1_MDIP1	12	DF_LAN1_MDIP0
13	LAN1_LINK#	14	LAN1_ACT-
15	VCTREF_GBE0_CT	16	SLP_S5#
17	LPC_PME#	18	SLP_S3#
19	VSB3	20	PWRBTN#_PM
21	SLP_BTN# (not implement)	22	LID_BTN# (not implement)
23	GND	24	GND
25	GND	26	PWROK_Q7
27	BATLOW# (not implement)	28	RST_SYS#
29	DF_SATA0_TX+	30	DF_SATA1_TX+
31	DF_SATA0_TX-	32	DF_SATA1_TX-
33	SATA_ACT#	34	GND
35	DF_SATA0_RX+	36	DF_SATA1_RX+
37	DF_SATA0_RX-	38	DF_SATA1_RX-
39	GND	40	GND
41	BIOS_DISABLE#	42	SLOT2_CLK
43	SLOT2_CD#	44	SD2_LED
45	SLOT2_CMD	46	SLOT2_WP
47	SD2PWR#	48	SLOT2_DATA1
49	SLOT2_DATA0	50	SLOT2_DATA3
51	SLOT2_DATA2	52	SLOT2_DATA5
53	SLOT2_DATA4	54	SLOT2_DATA7
55	SLOT2_DATA6	56	RSVD
57	GND	58	GND
59	HAD_SYNC	60	SMB_CLK
61	HAD_RST#	62	SMB_DATA
63	HAD_BITCLK	64	SMB_ALERT#
65	HAD_SDATAIN0	66	I2C_CLK
67	HAD_SDATAOUT	68	I2C_DAT
69	PM_THRM#	70	WDTRIG#
71	THERMTRIP#	72	WDOUT (not implement)
73	GND	74	GND
75	DF_USB_PN7	76	DF_USB_PN6
77	DF_USB_PP7	78	DF_USB_PP6
79	USB_6_7_OC#	80	USB_4_5_OC#
81	DF_USB_PN5	82	DF_USB_PN4
83	DF_USB_PP5	84	DF_USB_PP4

85	USB_2_3_OC	86	USB_0_1_OC#
87	DF_USB_PN3	88	DF_USB_PN2
89	DF_USB_PP3	90	DF_USB_PP2
91	USB_HOST_PRES#	92	USB_HC_SEL
93	DF_USB_PN1	94	DF_USB_PN0
95	DF_USB_PP1	96	DF_USB_PP0
97	GND	98	GND
99	LA_DATAP0	100	LB_DATAP0 (not implement)
101	LA_DATAN0	102	LB_DATAN0 (not implement)
103	LA_DATAP1	104	LB_DATAP1 (not implement)
105	LA_DATAN1	106	LB_DATAN1 (not implement)
107	LA_DATAP2	108	LB_DATAP2 (not implement)
109	LA_DATAN2	110	LB_DATAN2 (not implement)
111	L_VDDEN	112	L_BKLTEN
113	LA_DATAP3	114	LB_DATAP3 (not implement)
115	LA_DATAN3	116	LB_DATAN3 (not implement)
117	GND	118	GND
119	DF_LA_CLKP	120	DF_LB_CLKP (not implement)
121	DF_LA_CLKN	122	DF_LB_CLKN (not implement)
123	L_BKLTCTL	124	RSVD
125	LVDS_DID_DAT	126	LVDS_BLC_DAT
127	LVDS_DID_CLK	128	LVDS_BLC_CLK
129	RSVD	130	RSVD
131	SDVO_CLK+	132	SDVO_INT+
133	SDVO_CLK-	134	SDVO_INT-
135	GND	136	GND
137	SDVO_GREEN+	138	SDVO_FLDSTALL+
139	SDVO_GREEN-	140	SDVO_FLDSTALL-
141	GND	142	GND
143	SDVO_BLUE+	144	SDVO_TVCLKIN+
145	SDVO_BLUE-	146	SDVO_TVCLKIN-
147	GND	148	GND
149	SDVO_RED+	150	SDVO_CTRLDATA
151	SDVO_RED-	152	SDVO_CTRLCLK
153	N/C	154	N/C
155	DF_CLK_PCIE+	156	PCIE_WAKE#
157	DF_CLK_PCIE-	158	RST#
159	GND	160	GND
161	PCIE_TX3+ (not implement)	162	PCIE_RX3+(not implement)
163	PCIE_TX3- (not implement)	164	PCIE_RX3- (not implement)
165	GND	166	GND
167	PCIE_TX2+ (not implement)	168	PCIE_RX2+(not implement)
169	PCIE_TX2- (not implement)	170	PCIE_RX2- (not implement)
171	EXCD0_PERST#	172	EXCD1_PERST#
173	PCIE_TX1+	174	PCIE_RX1+

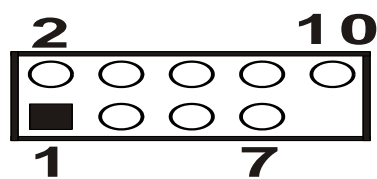
175	PCIE_TX1-	176	PCIE_RX1-
177	EXCD0_CPPE# (not implement)	178	EXCD1_CPPE# (not implement)
179	PCIE_TX0+	180	PCIE_RX0+
181	PCIE_TX0-	182	PCIE_RX0-
183	GND	184	GND
185	LPC_AD0	186	LPC_AD1
187	LPC_AD2	188	LPC_AD3
189	CLK_LPC_FWH	190	LPC_FRAME#
191	LPC_SERIRQ	192	LPC_LDRQ#(not implement)
193	V3.3A_RTC	194	SPKR
195	FAN_TACHOIN (not implement)	196	FAN_PWMOUT (no implement)
197	GND	198	GND
199	RSVD	200	RSVD
201	RSVD (use for A20M#)	202	RSVD
203	RSVD	204	MFG_N/C
205	VS5	206	VS5
207	MFG_N/C	208	MFG_N/C
209	MFG_N/C	210	MFG_N/C
211	VCC	212	VCC
213	VCC	214	VCC
215	VCC	216	VCC
217	VCC	218	VCC
219	VCC	220	VCC
221	VCC	222	VCC
223	VCC	224	VCC
225	VCC	226	VCC
227	VCC	228	VCC
229	VCC	230	VCC

J15 : SD Card Slot

PIN No.	Signal Description
1	DAT3
2	CMD_RSP
3	GND
4	VCC
5	CLK
6	GND
7	DAT0
8	DAT1
9	DAT2
Sa	WP#
Sb	CD#
Sc	CD#_COM

J16 : Dual Port USB Header(Only USB2.0 Device)

PIN No.	Signal Description	PIN No.	Signal Description
1	+5V	2	+5V
3	USBD6N	4	USBD7N
5	USBD6P	6	USBD7P
7	Ground	8	Ground
		10	NC

J17 : Client USB Header

PIN No.	Signal Description	PIN No.	Signal Description
1	+5V	2	NC
3	USBD1N	4	NC
5	USBD1P	6	NC
7	Ground	8	NC
		10	NC

J19 : Front panel Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	HD_LED_P	2	FP PWR/SL_P
3	HD_LED_N	4	FP PWR/SL_N
5	RST_SW_N	6	PWR_SW_P
7	RST_SW_P	8	PWR_SW_N
9	RSVD_DNU	10	

J20 : IrDA Connector

PIN No.	Signal Description
1	IRRX
2	Ground
3	Ground
4	NC
5	IRTX
6	VCC

J21 : RJ45 LAN Port

PIN No.	Signal Description
1	L1_MDIP0
2	L1_MDIN0
3	L1_MDIP1
4	L1_MDIN1
5	VCTREF_GBE0_CT
6	GND
7	L1_MDIP2
8	L1_MDIN2
9	L1_MDIP3
10	L1_MDIN3
11	LAN1_ACT-
12	LAN1_LINK#
13	LAN1_LINK1000-
14	LAN1_LINK100-

J22 : COM2 Serial Port BOX Header

PIN No.	Signal Description	PIN No.	Signal Description
1	DCD#2	2	DSR#2
3	RXD#2	4	RTS#2
5	TXD#2	6	CTS#2
7	DTR#2	8	RI#2
9	GND	10	

J23 : Dual Port USB

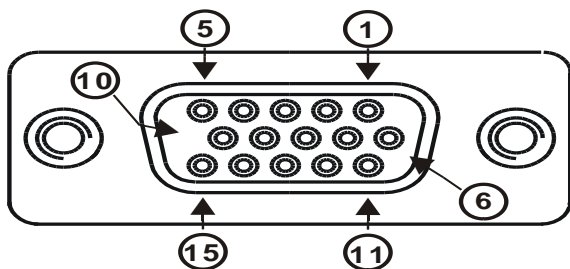
PIN No.	Signal Description	PIN No.	Signal Description
A1	+5V	B1	+5V
A2	USBD3N	B2	USBD2N
A3	USBD3P	B3	USBD2P
A4	Ground	B4	Ground

J24 : Dual Port USB

PIN No.	Signal Description	PIN No.	Signal Description
A1	+5V	B1	+5V
A2	USBD5N	B2	USBD4N
A3	USBD5P	B3	USBD4P
A4	Ground	B4	Ground

J25 : COM 1 Serial Port Connector

PIN No.	Signal Description		
	RS-232	RS-422	RS-485
1	DCD (Data Carrier Detect)	TX-	DATA-
2	RXD (Receive Data)	TX+	DATA+
3	TXD (Transmit Data)	RX+	N/C
4	DTR (Data Terminal Ready)	RX-	N/C
5	GND (Ground)	GND	GND
6	DSR (Data Set Ready)	N/C	N/C
7	RTS (Request to Send)	N/C	N/C
8	CTS (Clear to Send)	N/C	N/C
9	RI/5V/12V	N/C	N/C

J26 : D-SUB15 VGA Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	RED	2	GREEN
3	BLUE	4	ID0
5	Ground	6	Ground
7	Ground	8	Ground
9	NC	10	Ground
11	ID1	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

J27 : DC Jack 12V

PIN No.	Signal Description
2	V12CON_IN
3	GND
4	GND

Chapter 3

System Installation

This chapter provides the instructions to set up the system. The additional information is enclosed to help you set up onboard devices

3.1 Atom™ Ultra low power CPU (E620/E640T/E660T/E680T)



Depending on ordering models, PQ7-M105 equips Intel® ATOM E620/ E640T/ E660T/E680T CPU, it's an ultra low power consumption CPU. Alone with module type board and wide-temperature capability, it is suitable for various kind of applications.

It's an All-In-One CPU solution which also includes the function of Intel® Integrated Graphic and PCI-Express signals.

3.2 Intel® Platform Controller Hub EG20T

PQ7-M105 uses EG20T as IOH. It supports SATA II, USB, I2C BUS and CAN BUS, which is default supported by EG20T without adding any add-on card.

3.3 Main Memory

PQ7-M105 has on-board soldered memory chip. It's DDR2 800 Mhz with 512MB, 1GB and 2GB. Memory clock and related settings can be detected by BIOS.

3.4 Installing Q7 modules.

To install your PQ7-M105 standard chassis or proprietary environment, please perform the following:

Step 1 : Check all jumpers setting on proper position of the carrier board.

Step 2 : Install PQ7-M105 onto carrier board and screwed Q7 slots.

Step 3 : Place PQ7-M105 into the dedicated position in the system

Step 4 : Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that SBC is properly inserted and fixed by mechanism.

Note:

Please refer to section 3.3.1 to 3.3.7 to install INF/VGA/LAN/Audio drivers.

3.4.1 Chipset Component Driver

PQ7-M105 uses state-of-art Intel® EG20T PCH chipset. It's a new chipset that some old operating systems might not be able to recognize. To overcome this compatibility issue, for previous Windows Operating Systems such as Windows XP, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in PQ7-M105 CD-title.

Moreover, if using some old OS, the driver may not be supported anymore. We recommend changing the different OS to comply with this new chipset.

3.4.2 Intel® Integrated Graphics.

With latest ATOM series structure, PQ7-M105 has integrated graphic built-in CPU. Therefore Intel® Integrated Graphic supports sharing on board physical memories. PQ7-M105 has internal LVDS & SDVO signal depending on the design of carrier board. This combination makes PQ7-M105 an excellent piece of multimedia hardware.

With no additional video adaptor, this onboard video will usually be the system display output. By adjusting the BIOS setting to disable on-board VGA, an add-on PCI-Express Graphic card can take over the system display.

Drivers Support

Please find all the drivers in the PQ7-M105 CD-title. Drivers support, Windows XP/VISTA/Win7.

3.4.3 Intel® PROSet Gigabit Ethernet Controller

Drivers Support

Please find Intel® WG82574IT driver in /Ethernet directory of PQ7-M105 CD-title. The drivers support Windows XP/Vista/Win7.

3.4.4 Audio Controller

Please find Intel® High Definition Audio driver form PCOM-B216VG-VI CD-title. The drivers support Windows 2000 /XP/Vista/Win7.

Chapter 4

BIOS Setup Information

PQ7-M105 is equipped with the UEFI AMI BIOS stored in SPI Flash ROM. These BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in NVRAM so that it is retained during power-off periods. When system is turned on, PQ7-M105 communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start up.

4.1 Entering Setup -- Launch System Setup

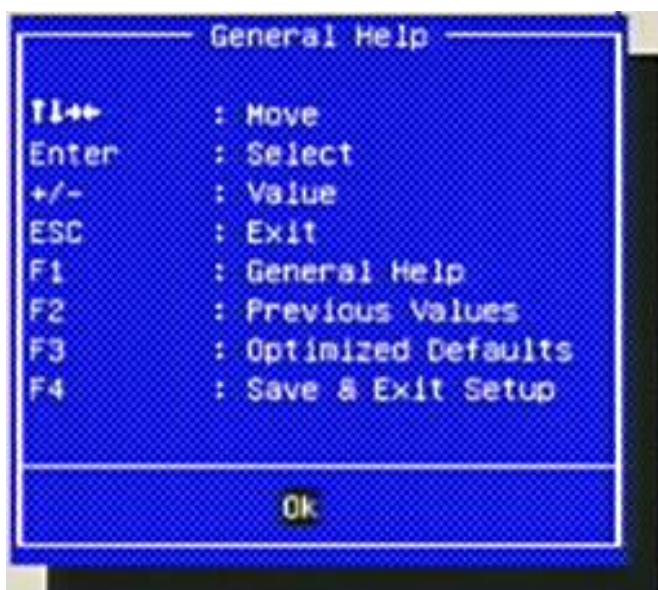
Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press key will enter BIOS setup screen.

Press to enter SETUP

If the message disappears before responding and still wish to enter Setup, please restart the system by turning it OFF and On or pressing the RESET button. It can be also reset by pressing <Ctrl>, <Alt>, and <Delete> keys on keyboard simultaneously.

Press <F1> to Run SETUP or Resume

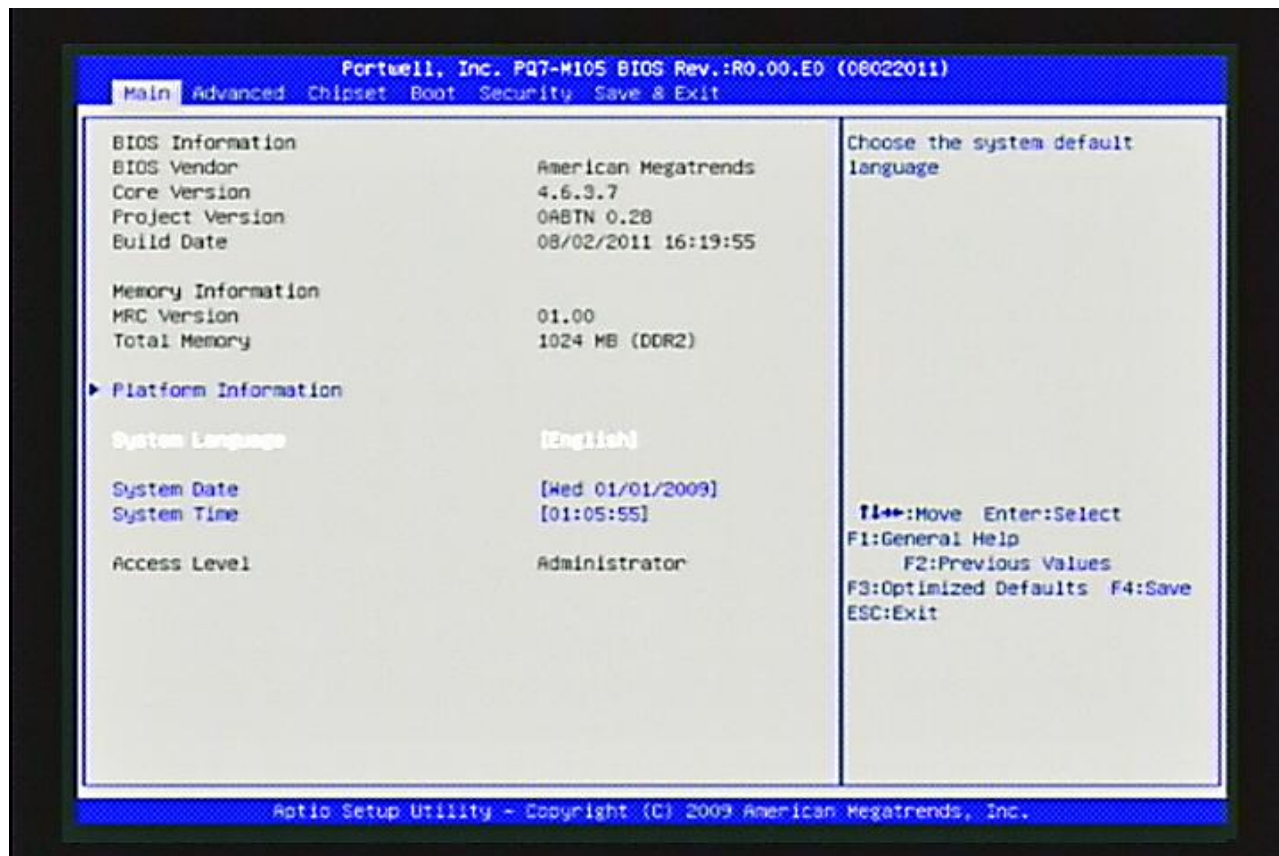
The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing <F1>. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press <Esc> to exit the Help screen.



4.2 Main

Use this menu for basic system configurations, such as time, date etc.

BIOS



BIOS Information, Memory Information

These items show the firmware and memory specifications of your system. Read only.

System Time

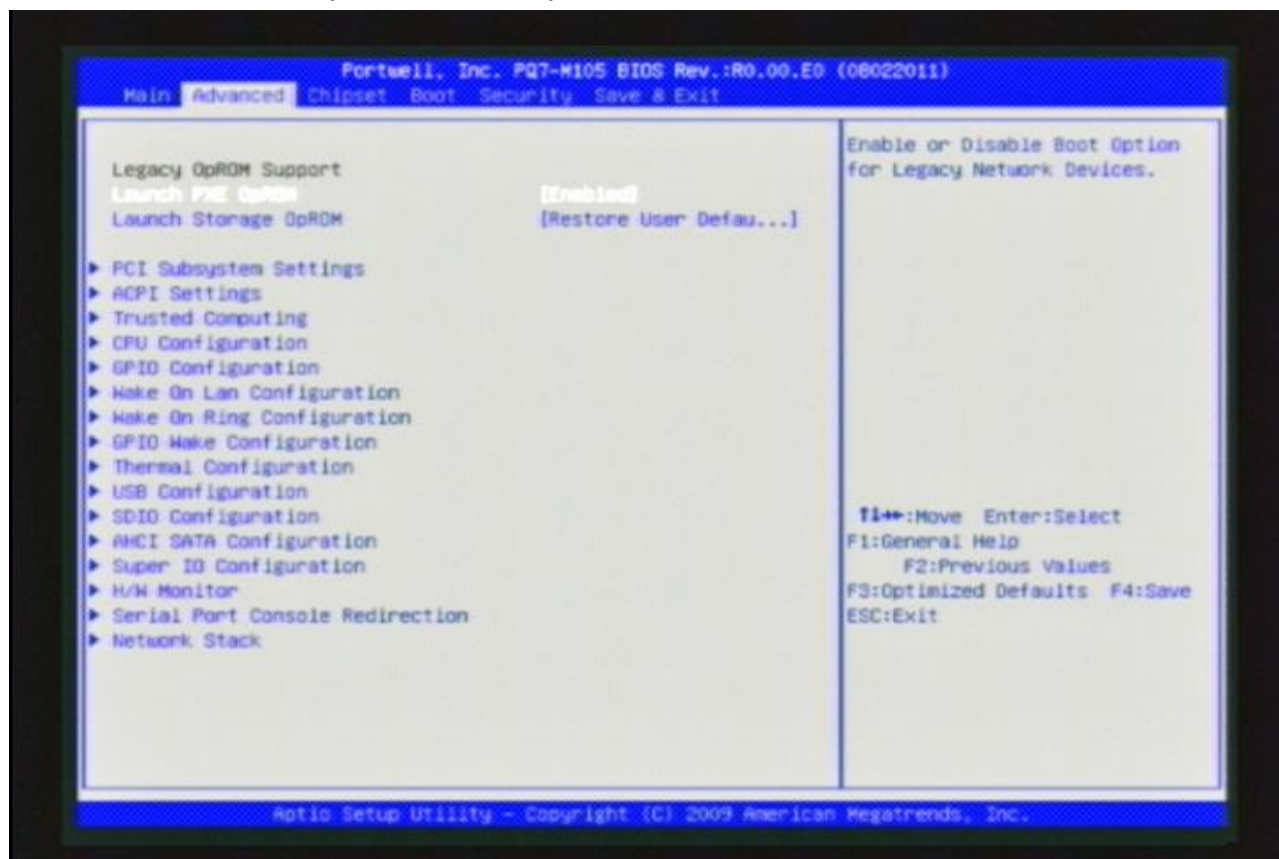
The time format is <Hour> <Minute> <Second>. Use [+] or [-] to configure system Time.

System Date

The date format is <Day>, <Month> <Date> <Year>. Use [+] or [-] to configure system Date.

4.3 Advanced

Use this menu to set up the items of special enhanced features.



Launch PXE OpROM

Enable or Disable Boot Option for Legacy Network Devices to have the ability booting up via Ethernet.

Choices: Disabled, Enabled.

Launch Storage OpROM

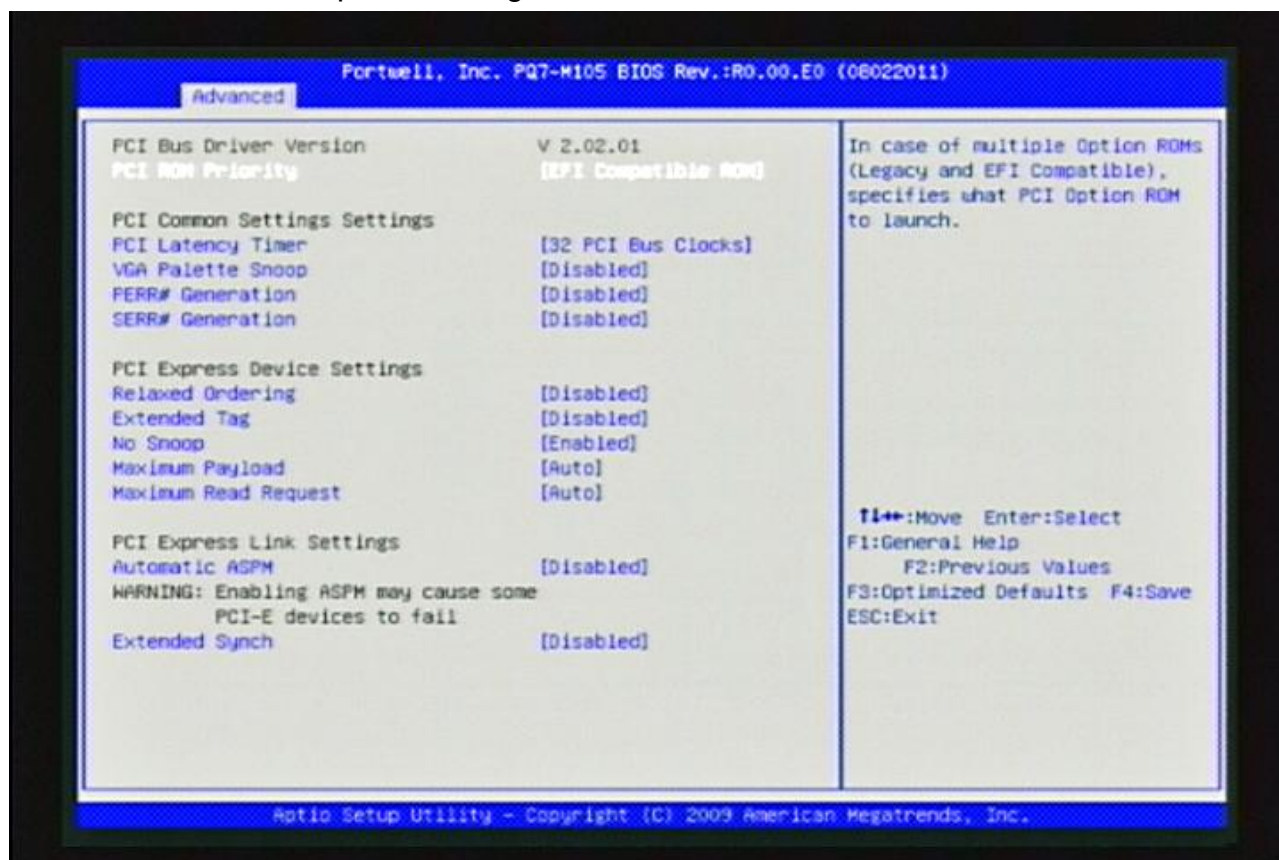
Enable or Disable Boot Option for Legacy Mass Storage devices.

If there is an add-on card with storage ROM, this option must set to enable.

Choices: Disabled, Enabled.

PCI Subsystem Settings

PCI, PCI-X and PCI Express Settings



PCI ROM Priority

In case of multiple Options (Legacy and EFI Compatible), specifies what PCI Option ROM to launch.

Choices: EFI Compatible ROM, Legacy ROM

PCI Latency Timer

Value to be programmed into PCI Latency Timer Register.

Choices: 32 PCI, 64 PCI, 96 PCI, 128 PCI, 160 PCI, 192 PCI, 224 PCI, 248 PCI Bus Clocks.

VGA Palette Snoop

Enable or Disable VGA Palette Register Snooping

Choices: Disabled, Enabled.

PERR# Generation

Enable or Disable PCI Device to generate PERR#

Choices: Disabled, Enabled.

SERR# Generation

Enable or Disable PCI Device to generate SERR#

Choices: Disabled, Enabled.

Relaxed Ordering

Enables or Disables PCI Express Device Relaxed ordering.

Choices: Disabled, Enabled.

Extended Tag

If Enable allows Device to use 8-bit Tag field as a requester

Choices: Disabled, Enabled.

No Snoop

Enables or Disables PCI Express No Snoop option.

Choices: Disabled, Enabled.

Maximum Payload

Set Maximum Payload of PCI Express or allow system BIOS to select the value.

Choices: Auto, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, 4096 Bytes.

Maximum Read Request

Set Maximum Read request size of PCI Express or allow system BIOS to select the value.

Choices: Auto, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, 4096 Bytes.

ASPM Support

Automatically Enable ASPM based on reported capabilities and known issues.

Choices: Disabled, Auto, Force L0.

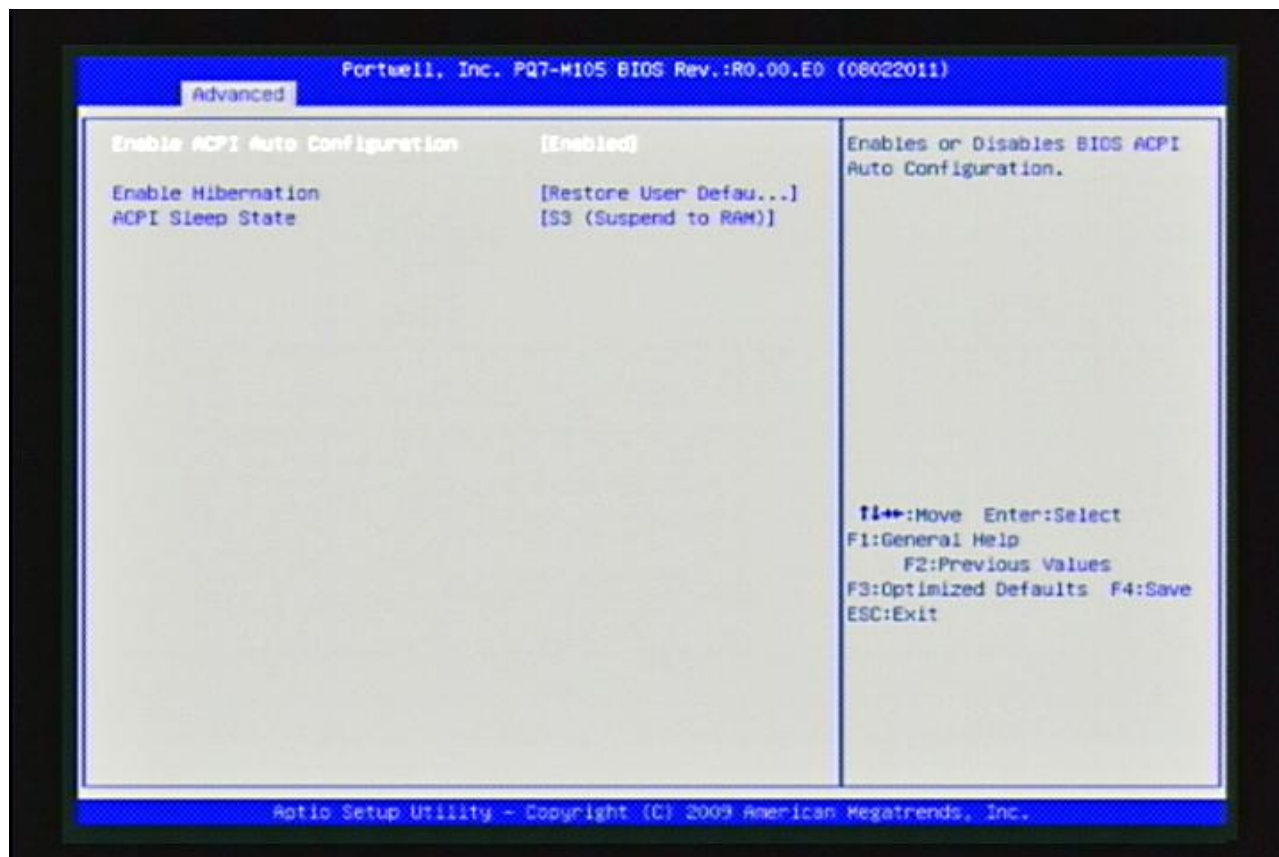
Extended Synch

If Enabled allows generation of Extended Synchronization patterns.

Choices: Disabled, Enabled.

ACPI Settings

System ACPI Parameters.



Enable ACPI Auto Configuration

Enables or Disables BIOS ACPI Auto configuration.

Choices: Enabled, Disabled.

Enable Hibernation

Enables or Disables system ability to Hibernation (OS/S4 Sleep state).

This option may not be effective with some OS.

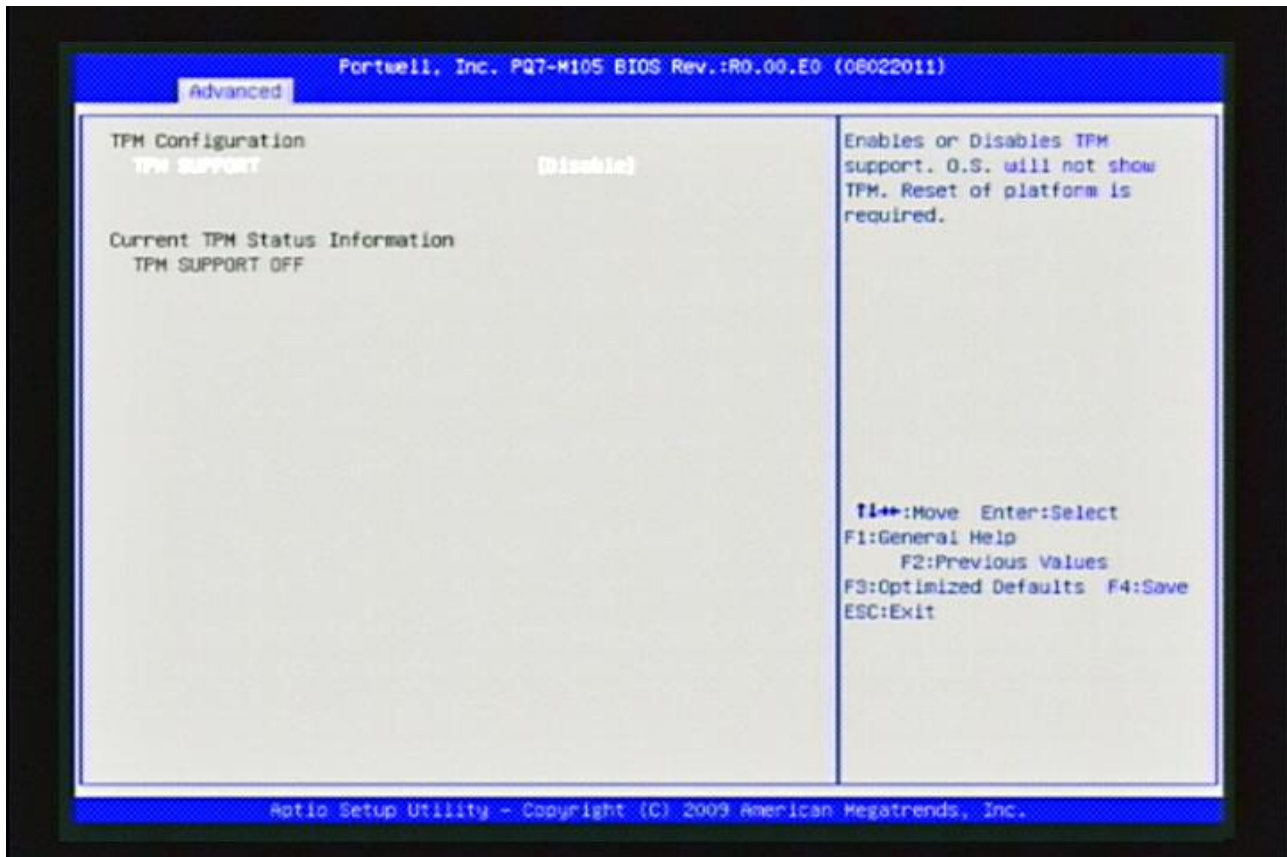
Choices: Enabled, Disabled.

ACPI Sleep State

Select the highest ACPI sleep state that the system will enter when SUSPEND button is pressed.

Choices: Suspend Disabled, S1 (CPU Stop Clock), S3 (Suspend to RAM).

Trusted Computing



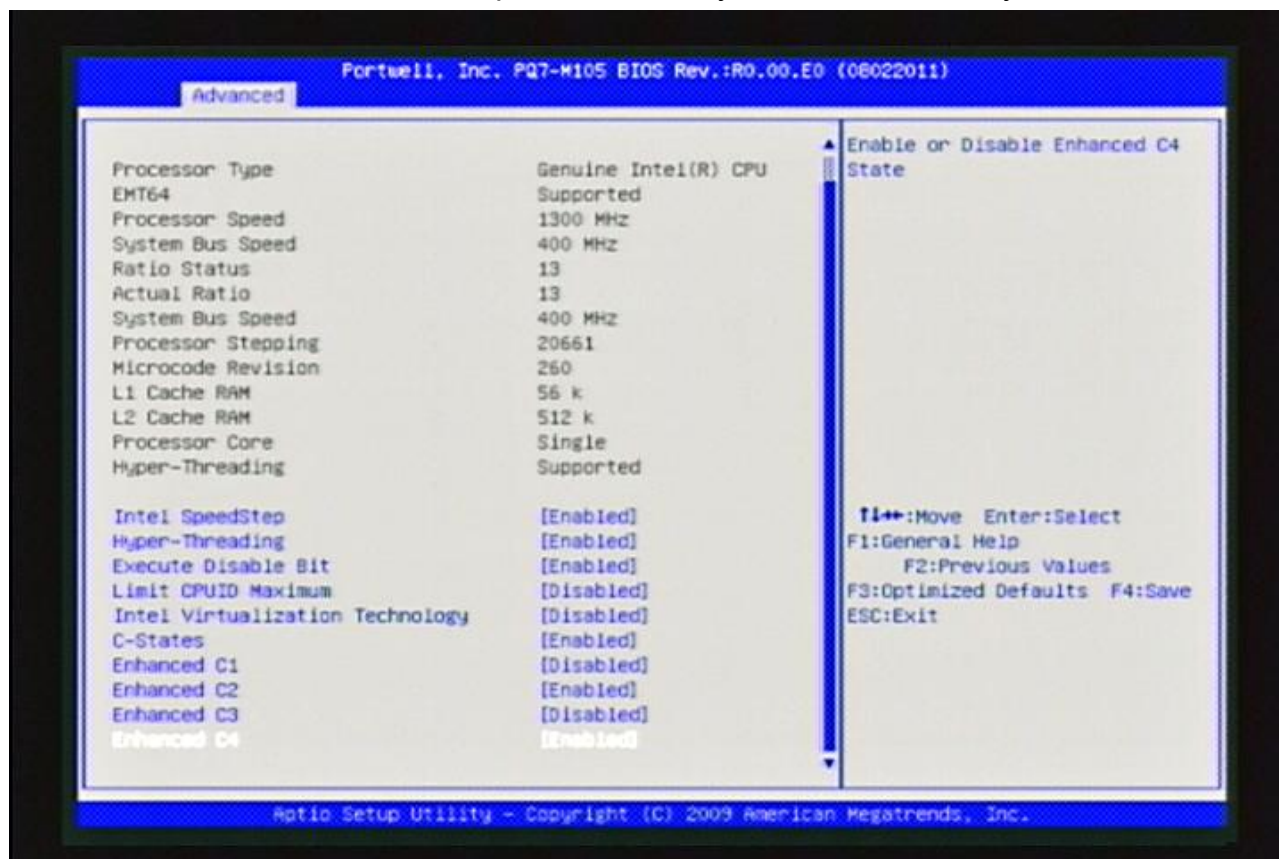
TPM SUPPORT

Enable or disable TPM Support

Choices: Enabled, Disabled.

CPU Configuration

These items show the advanced specifications of your CPU. Read only.



Intel SpeedStep

Enables or Disables Intel® SpeedStep™

Choices: Disabled, Enabled

Hyper-Threading

Enables for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS that's not optimized for Hyper-Threading Technology)

Choices: Disabled, Enabled

Execute Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 update3.)

Choices: Disabled, Enabled

Limit CPUID Maximum

Disabled for Windows XP.

Choices: Disabled, Enabled

Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Choices: Disabled, Enabled

C-States

Enables or Disables C2 and above.

Choices: Disabled, Enabled

Enhanced C1

Enables or Disables Enhanced C1 state.

Choices: Disabled, Enabled

Enhanced C2

Enables or Disables Enhanced C2 state

Choices: Disabled, Enabled

Enhanced C3

Enables or Disables Enhanced C3 state

Choices: Disabled, Enabled

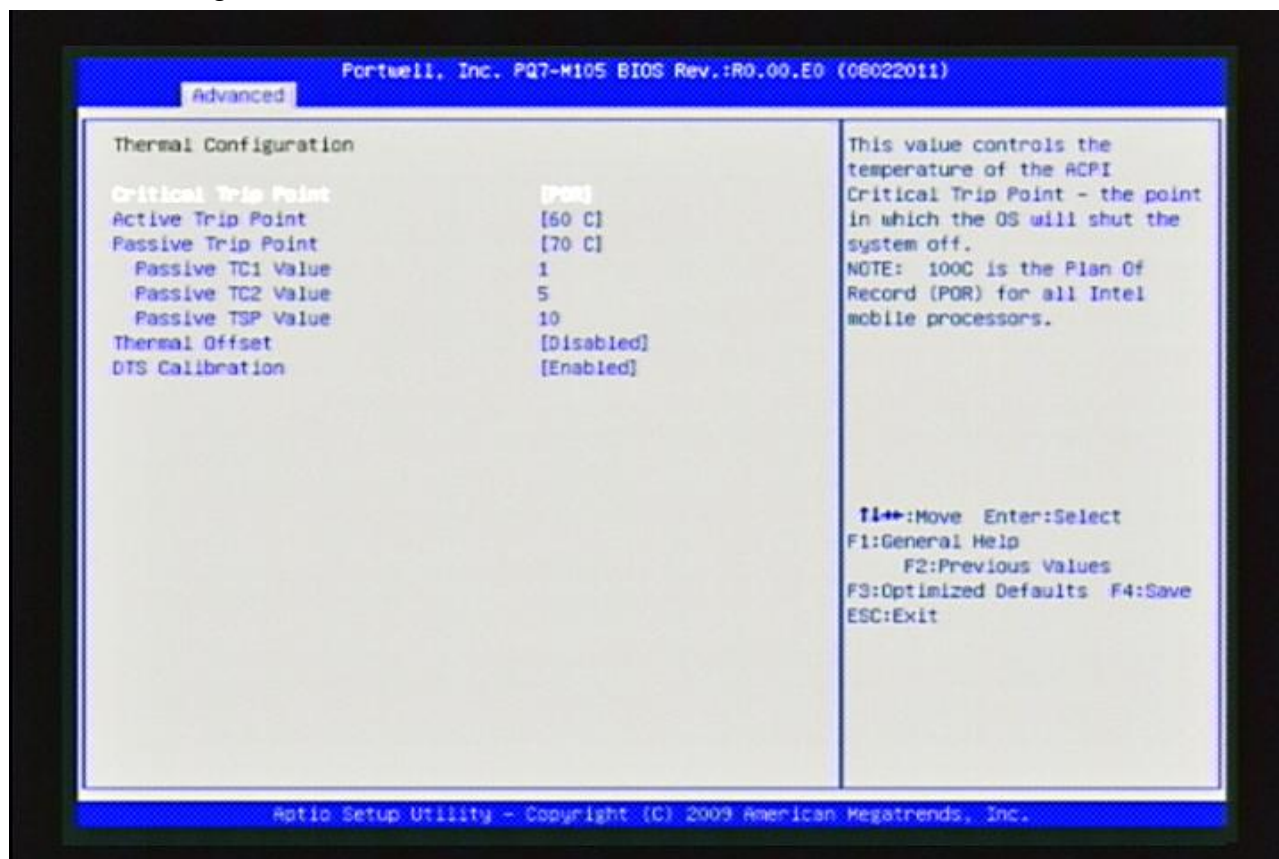
Enhanced C4

Enables or Disables Enhanced C4 state

Choices: Disabled, Enabled

Thermal Configuration

Thermal Configuration Parameters



Critical Trip Point

This value controls the temperature of the ACPI Critical Trip Point – the point in which the OS will shut the system off.

Choices: POR, 30, 40, 50, 60, 70, 80, 90, 95 C

Active Trip Point

This value controls the temperature of the ACPI active Trip Point – the point in which the OS will turn the processor fan on.

Choices: Disabled, 30, 40, 50, 60, 70, 80, 90, 95, 100 C

Passive Trip Point

This value controls the temperature of the ACPI Passive Trip Point – the point in which the OS will begin throttling the processor.

Choices: Disabled, 30, 40, 50, 60, 70, 80, 90, 95, 100 C

Passive TC1 Value

This value sets the TC1 value for the ACPI Passive Cooling Formula. Range 1-16

Choices: 1-16

Passive TC2 Value

This value sets the TC2 value for the ACPI Passive Cooling Formula. Range 1-16

Choices: 1-16

Passive TSP Value

This item sets the TSP value for the ACPI Passive cooling formula. It represents in tenths of a second how often the OS will read the temperature when passive cooling is enabled. Range 2-32

Choices: 2-32

Thermal Offset

Whether Thermal offset (Read from CPU MSR 03Fh) is used by the KSC to adjust thermal management.

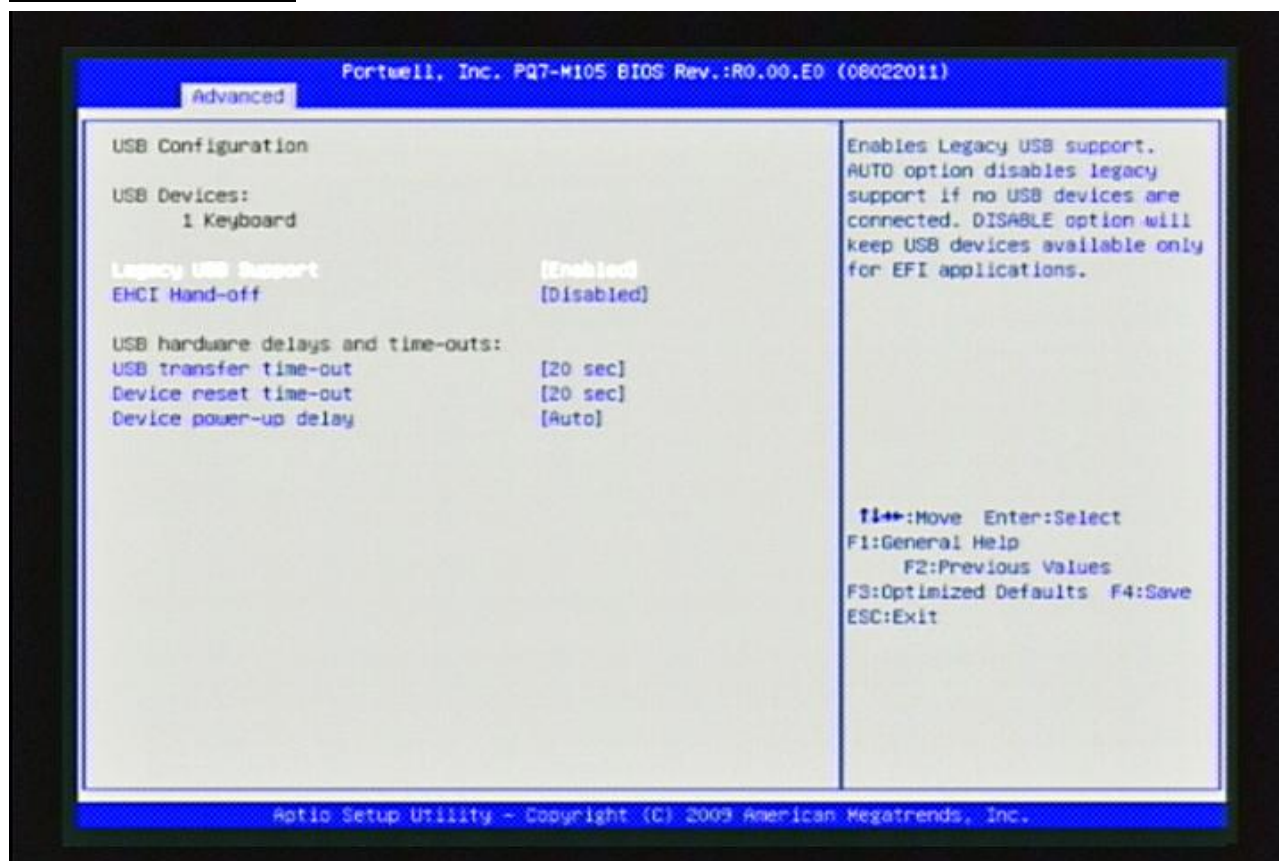
Choices: Disabled, Enabled

DTS Calibration

Enable or disable DTS Calibration.

Choices: Disabled, Enabled

USB Configuration



Legacy USB Support

Enable Legacy USB support. AUTO option disables legacy support if no USB devices are connected Disabled option will keep USB devices available only for EFI applications.

Choices: Disabled, Enabled

EHCI Hand-off

This is workaround for OS without EHCI hand-off support. The EHCI ownership changing should be claimed by EHCI driver.

Choices: Disabled, Enabled

USB Transfer time-out

The time-out value for Control, Bulk and Interrupt transfers.

Choices: 1, 5, 10, 20 sec

Device reset time-out

USB mass storage device start unit command time-out

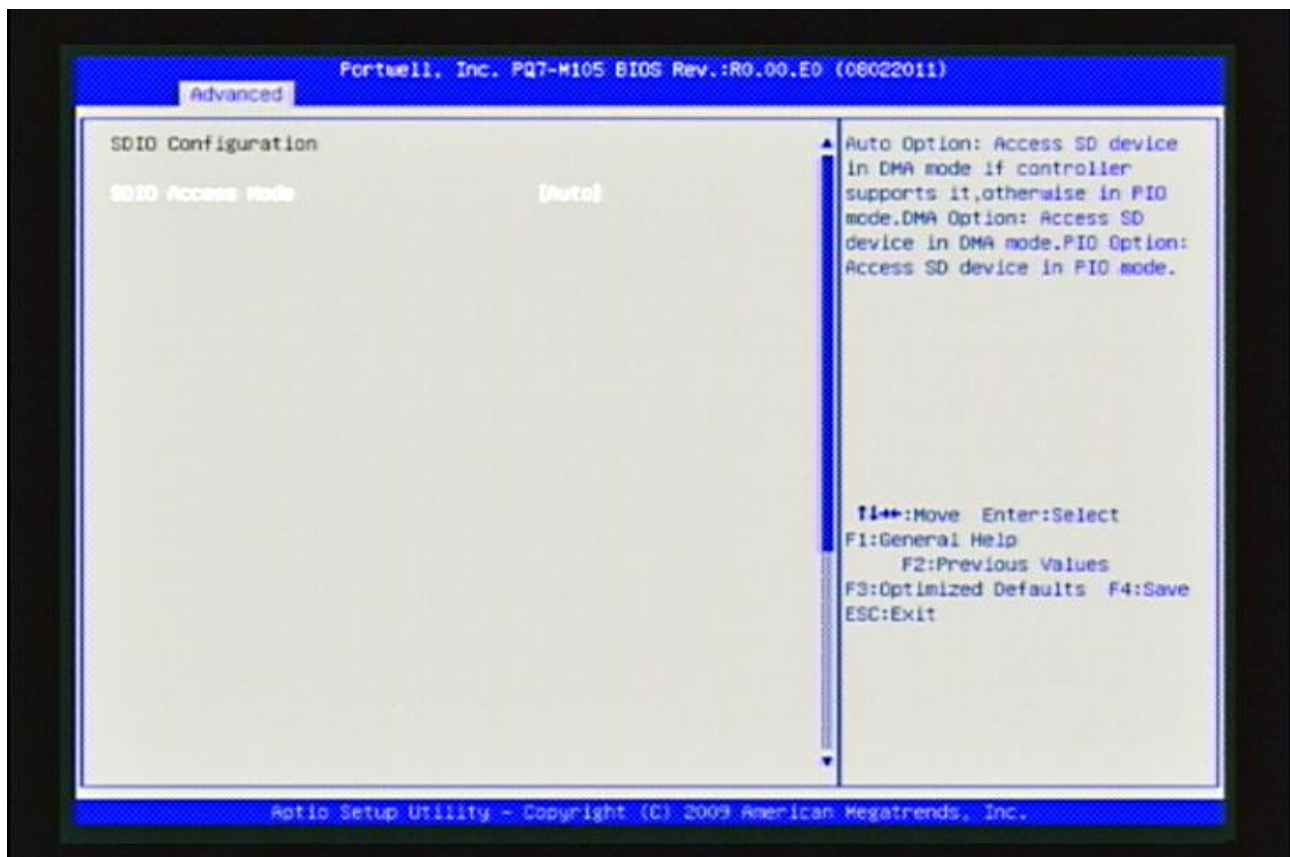
Choices: 10, 20, 30, 40 sec

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host controller. 'AUTO' uses default value: for a Root port is 100 ms, for a Hub port, the delay is taken from Hub descriptor.

Choices: Auto, Manual

SDIO Configuration

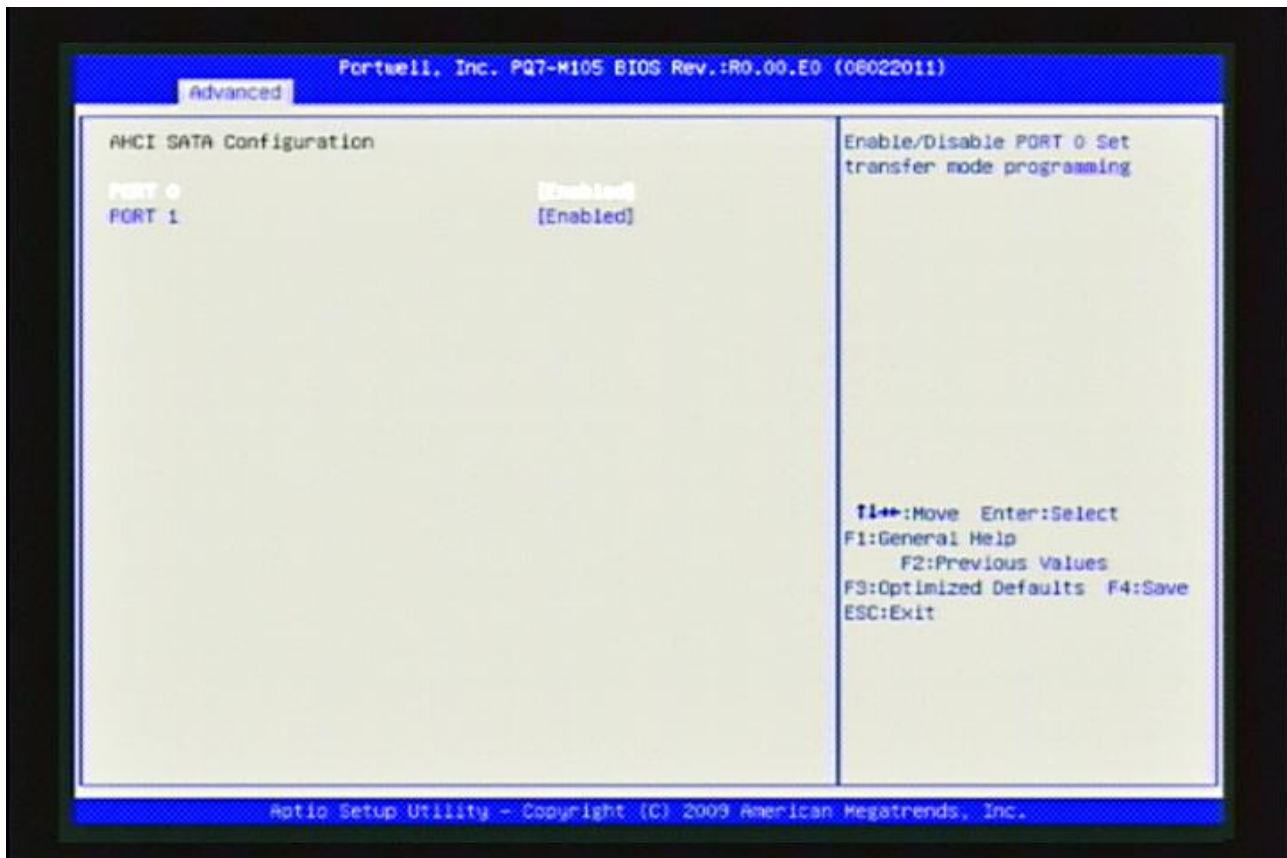


SDIO Access Mode

Auto option: Access SD device in DMA mode if controller supports it, otherwise in PIO mode. DMA option: Access SD device in DMA mode. PIO option: Access SD device in PIO mode.

Choices: Auto, DMA, PIO

AHCI SATA Configuration



Port 0

Enables or disables PORT 0 set transfer mode programming.

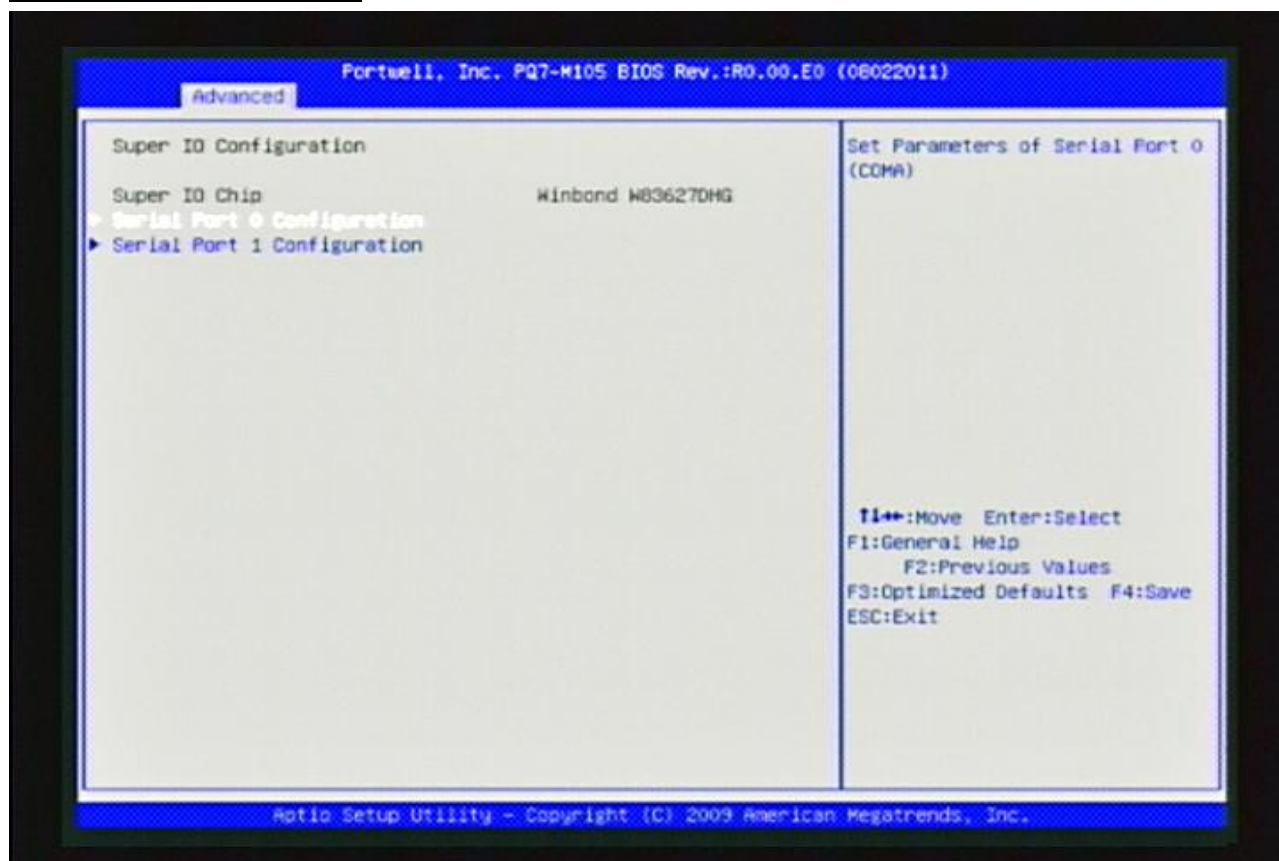
Choices: Disabled, Enabled

Port 1

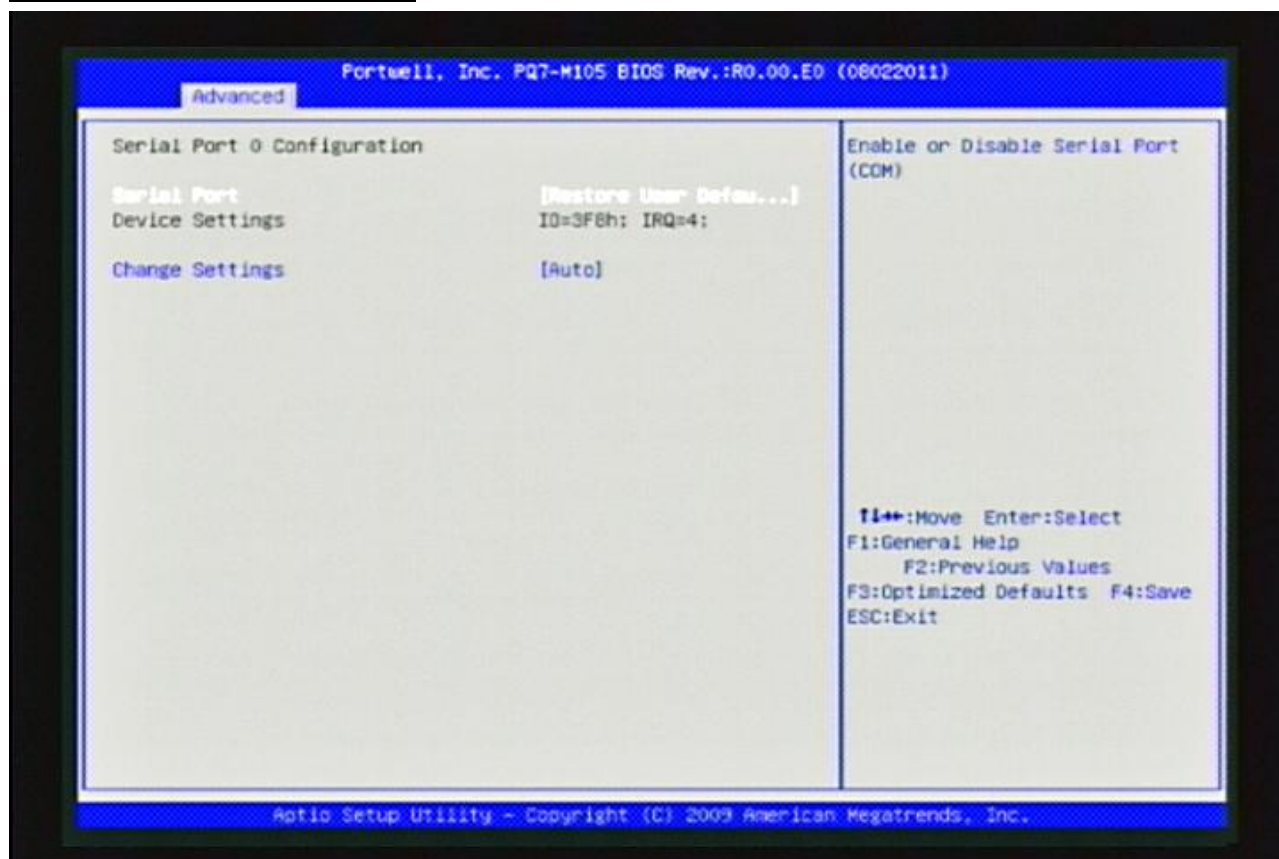
Enables or disables PORT 0 set transfer mode programming.

Choices: Disabled, Enabled

Super IO Configuration



Serial Port 0 Configuration



Serial Port

Choices: Disabled, Enabled

Change Settings

Choices: Auto, IO=3F8h; IRQ=4;

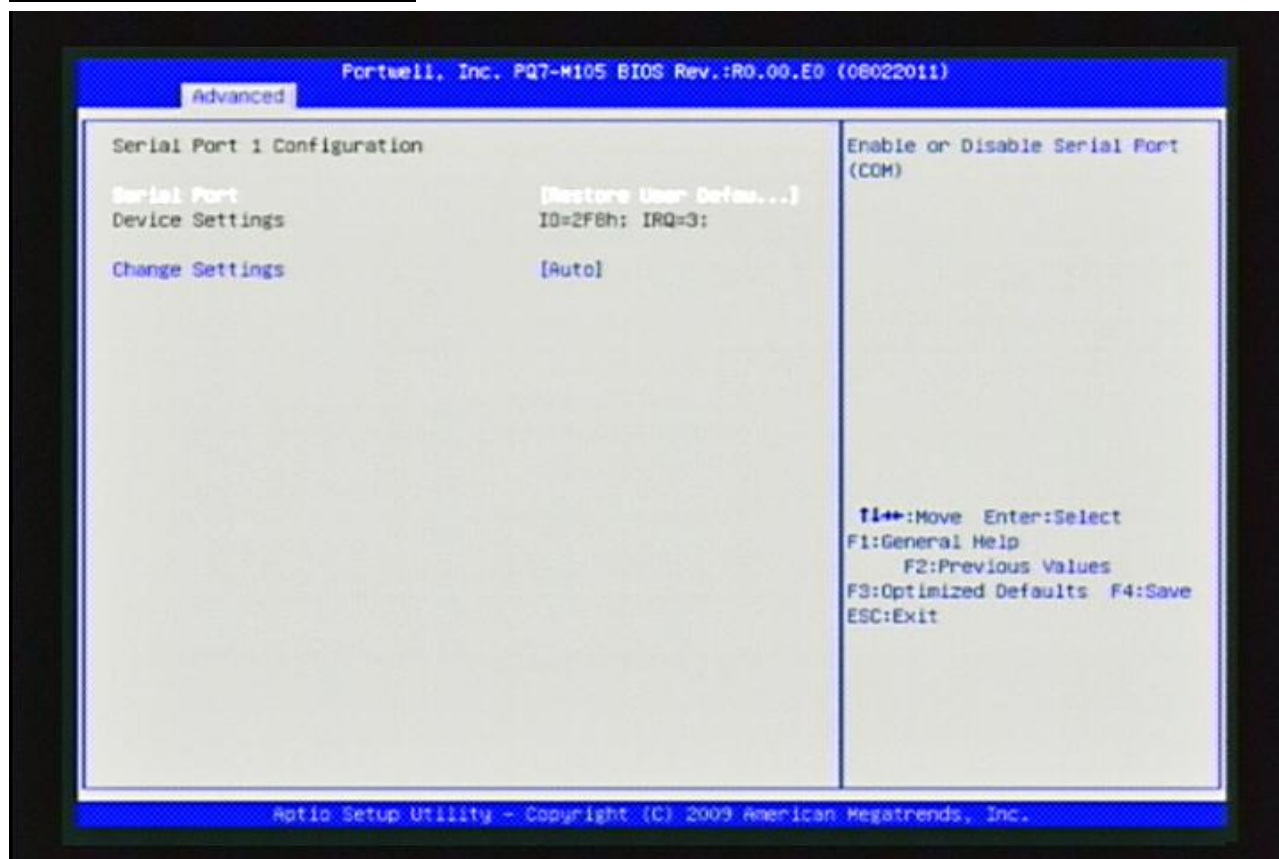
IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

Serial Port 1 Configuration



Serial Port

Choices: Disabled, Enabled

Change Settings

Choices: Auto, IO=2F8h; IRQ=3;

IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

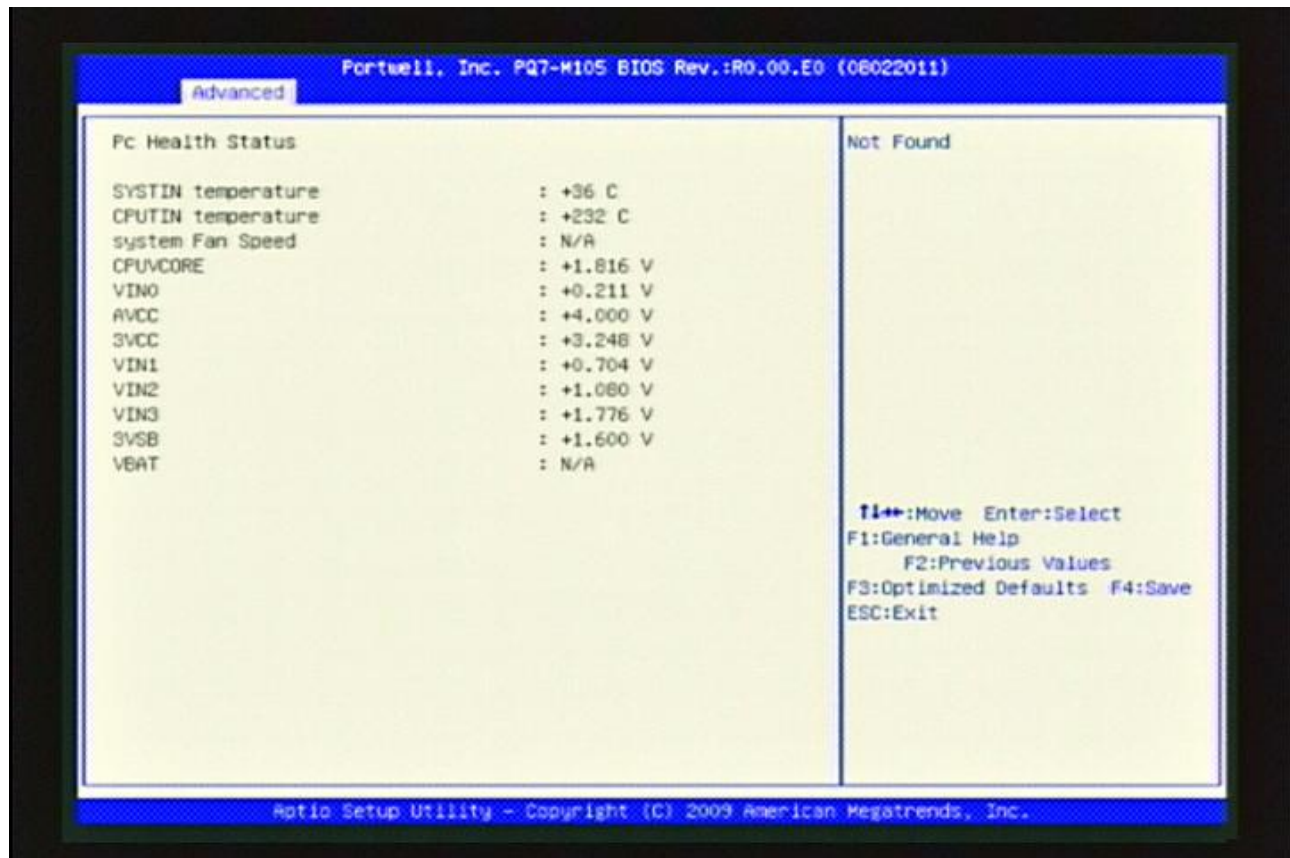
IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

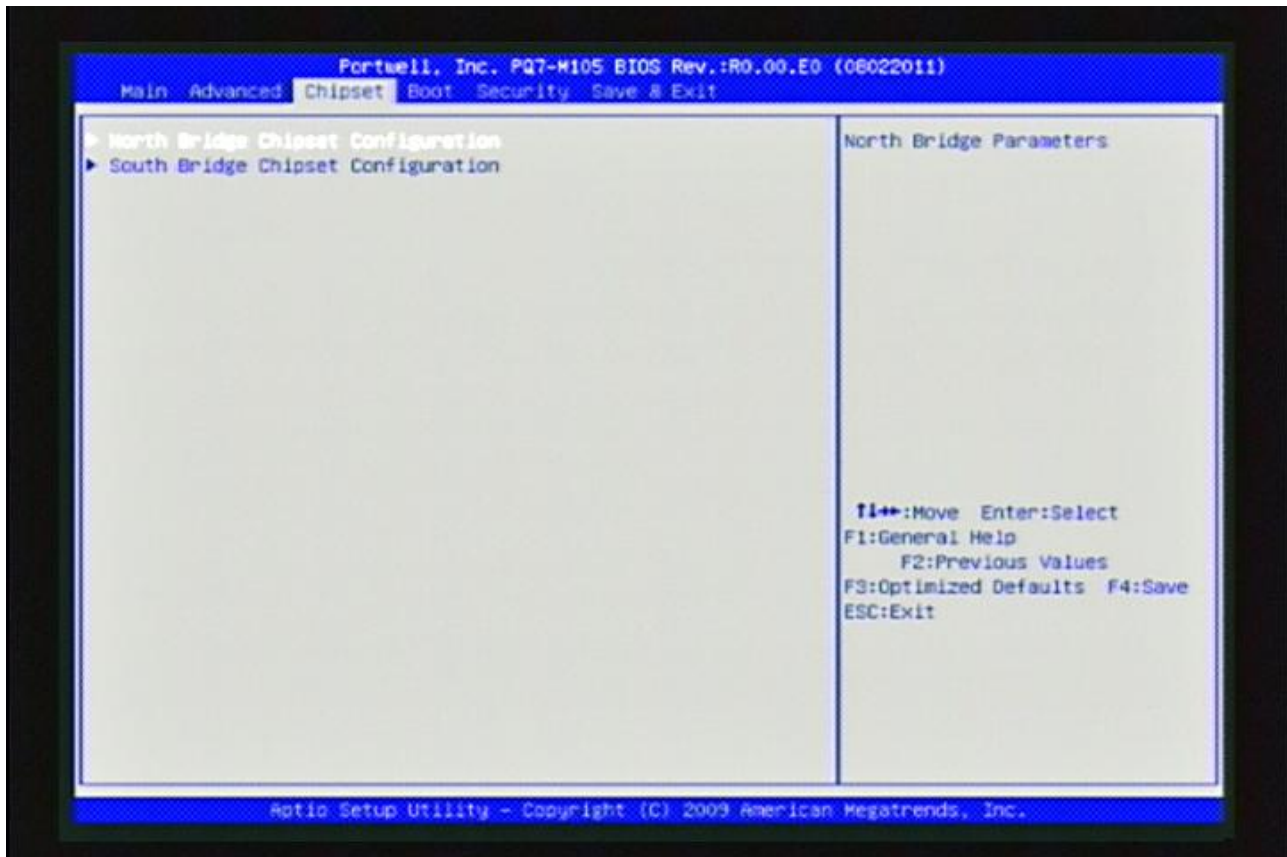
H/W Monitor

This section shows the status of SBC, read only

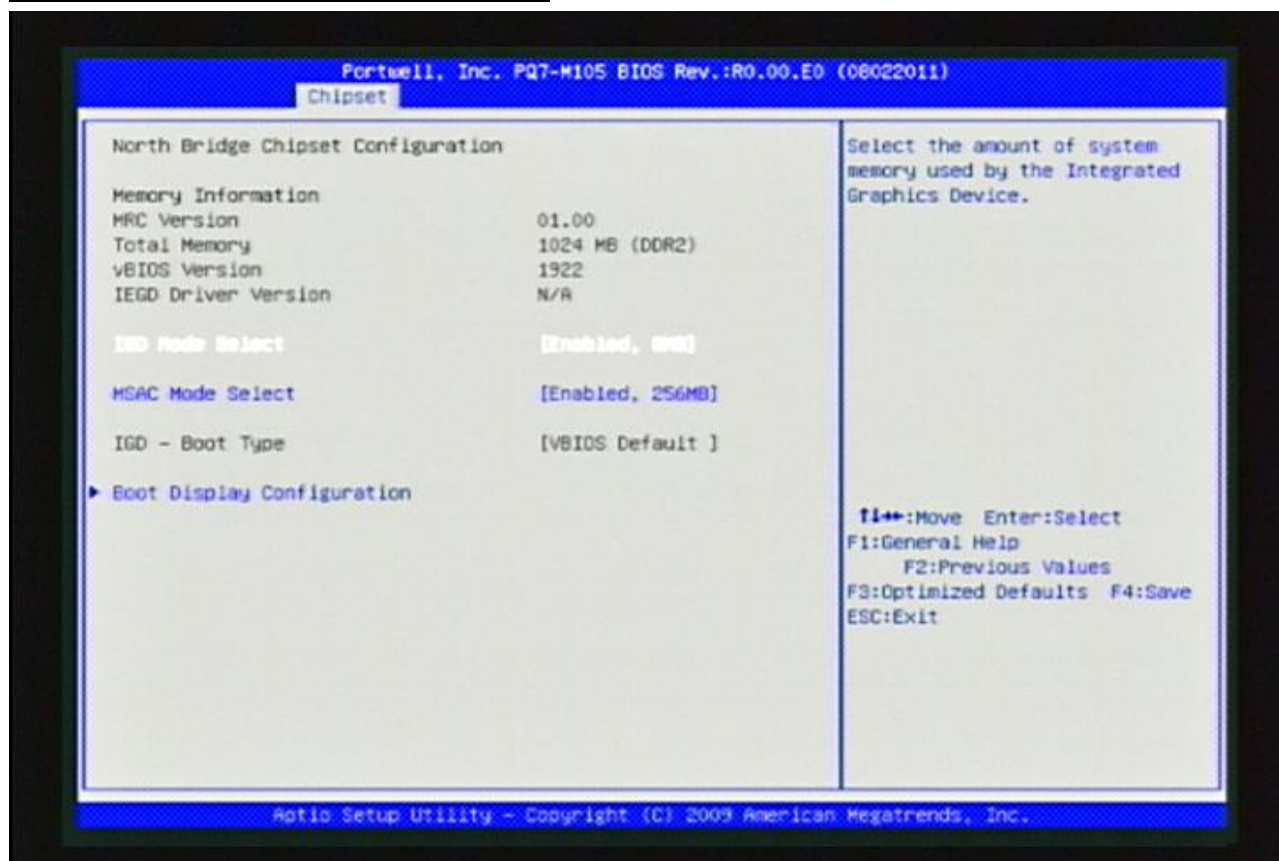


4.4 Chipset

This menu controls the advanced features of the onboard Host Bridge and South Bridge.



North Bridge Chipset Configuration



IGD Mode Select

Select the amount of system memory used by the Integrated Graphics Device.

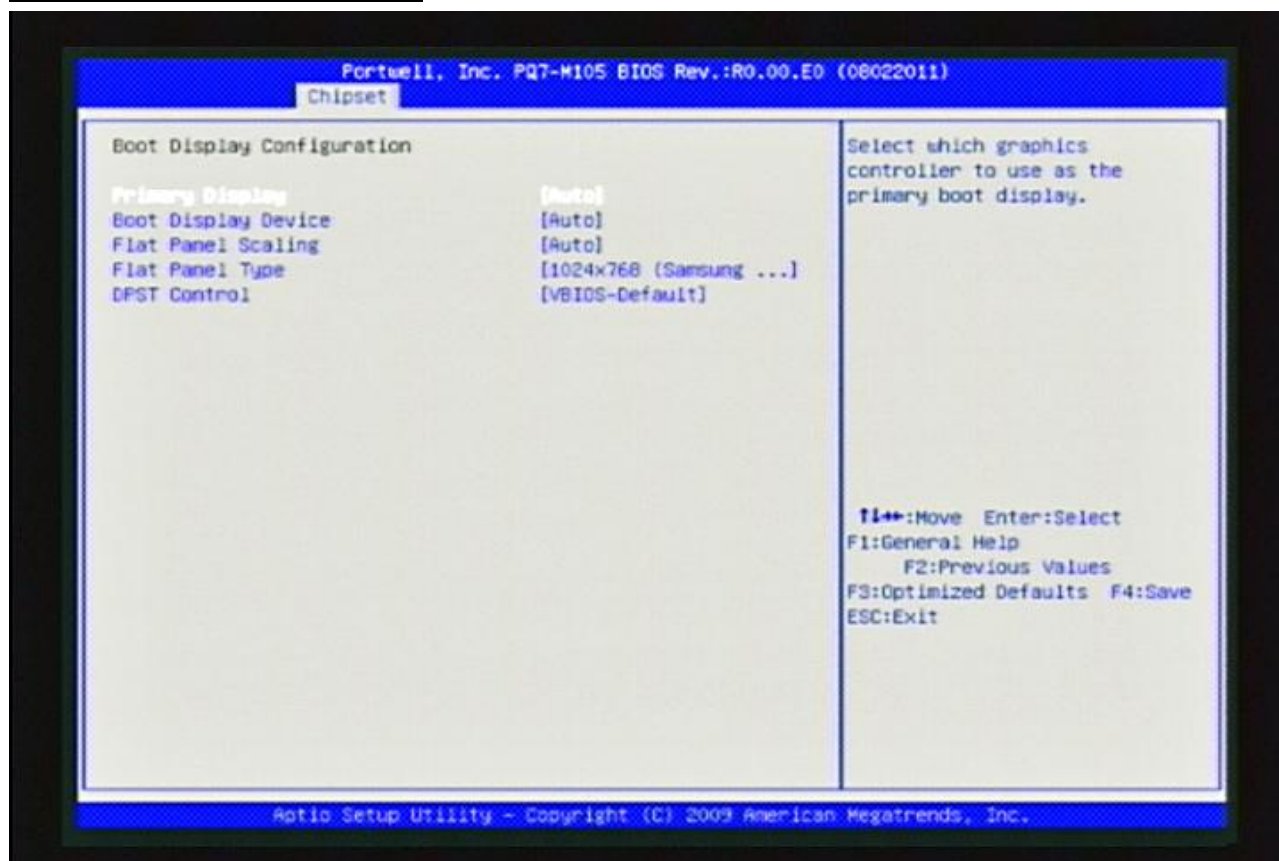
Choices: Disabled, Enabled 1MB, 4MB, 8MB, 16MB, 32MB, 48MB, 64MB

MSAC Mode Select

Select the size of the graphic memory aperture and untrused space. Used by the Integrated Graphics Device.

Choices: Enabled 128MB, 256MB, 512MB

Boot Display Configuration



Primary Display

Select which graphics controller to use as the primary boot display.

Choices: Auto, IGD, PEG

Boot Display Device

Choices: Auto, Integrated LVDS, External DVI/HDMI, External TV, External CRT, External LVDS

Flat Panel Scaling

Choices: Auto, Focred, Disabled

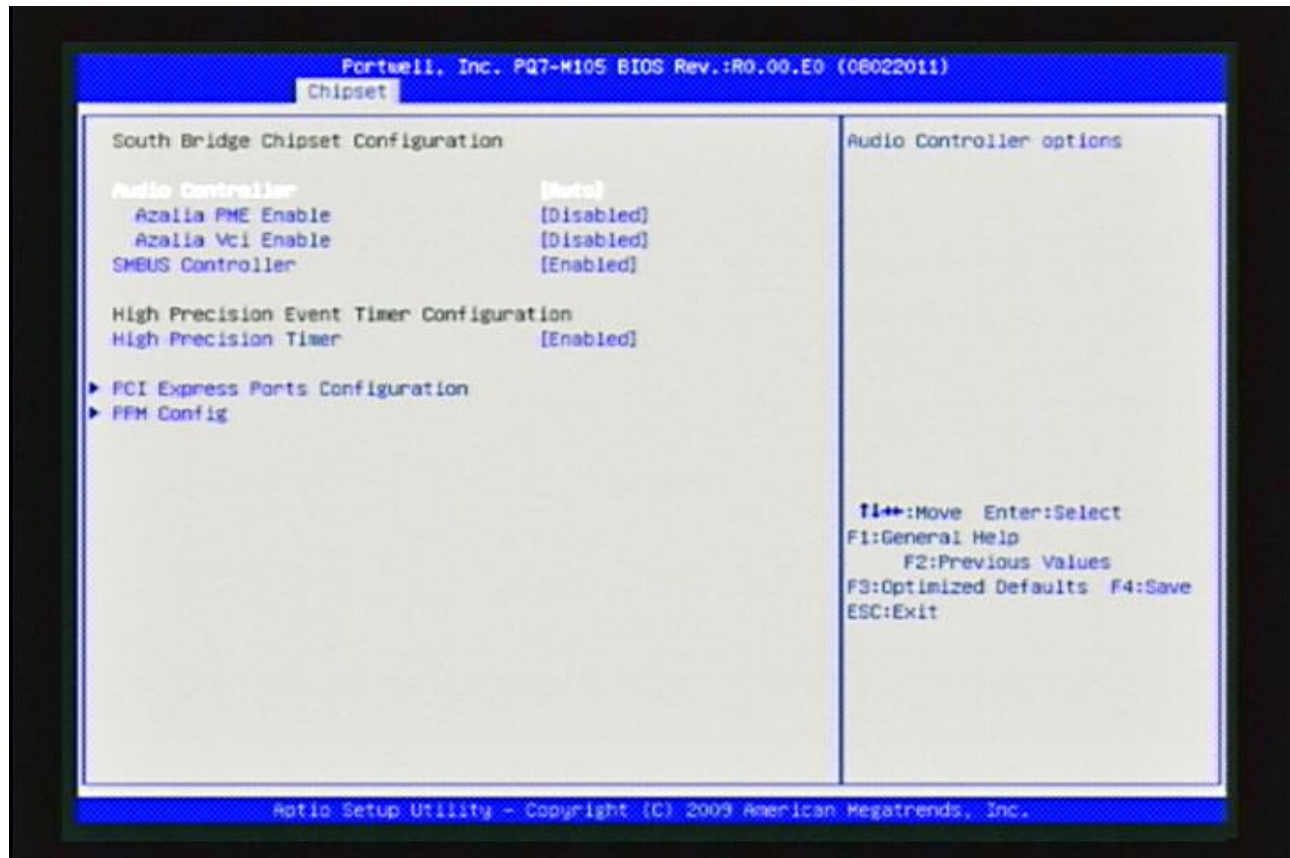
Flat Panel Type

Choices: 640x480 (generic), 800x600 (generic), 1024x768 (generic), 640x480 (NEC 8.4"), 800x600 (NEC 9"), 1026x600 (TMD 5.61"), 1026x600 (Samsung 4.8"), 1024x768 (Samsung 15"), 1280x768 (Sharp 7.2"), 1280x800 (Samsung 15.4")

DPST Control

Choices: VBIOS-Default, DPST Disabled, DPST Enabled L1, L2, L3, L4, L5

South Bridge Chipset Configuration



Audio Controller

Audio Controller options

Choices: Auto, Disabled, Enabled,

SMbus Controller

SMbus controller options

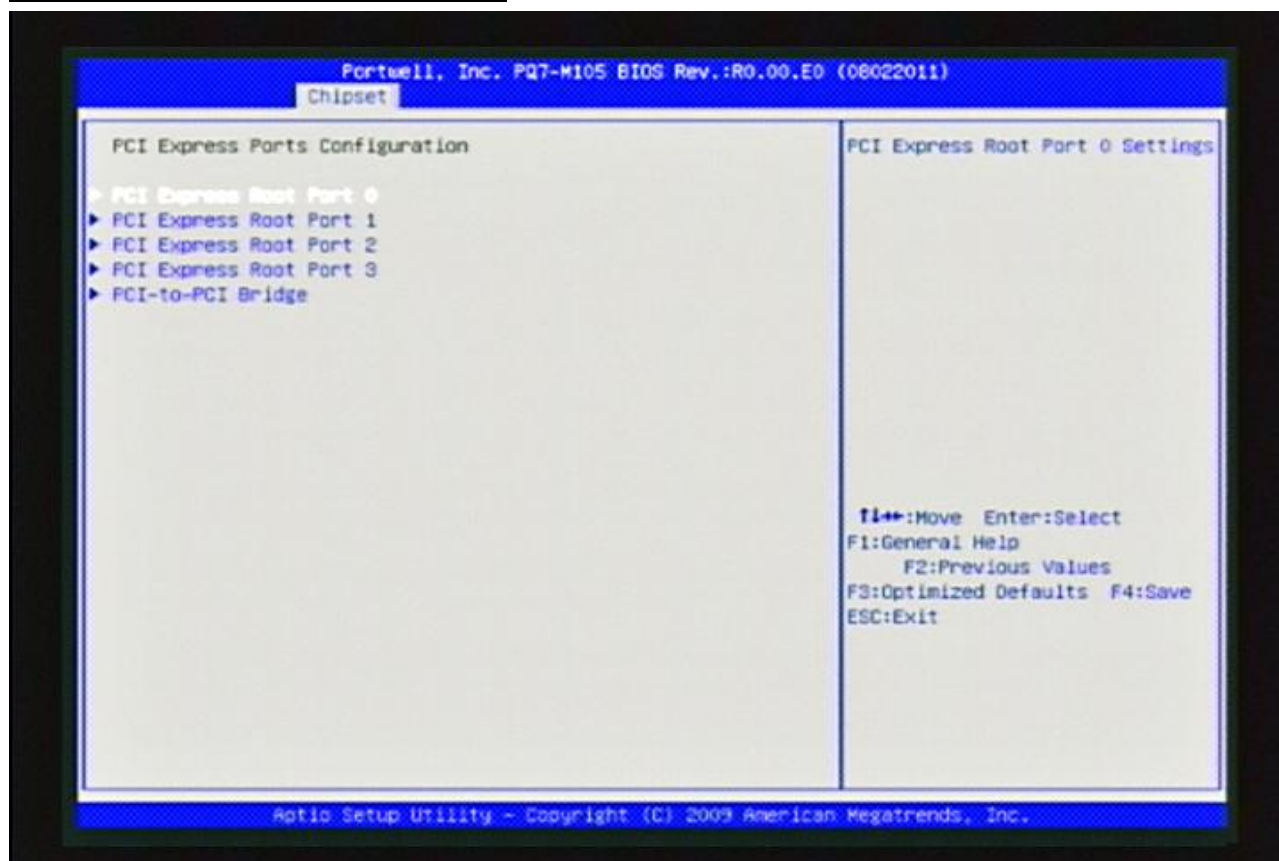
Choices: Disabled, Enabled

High Precision Timer

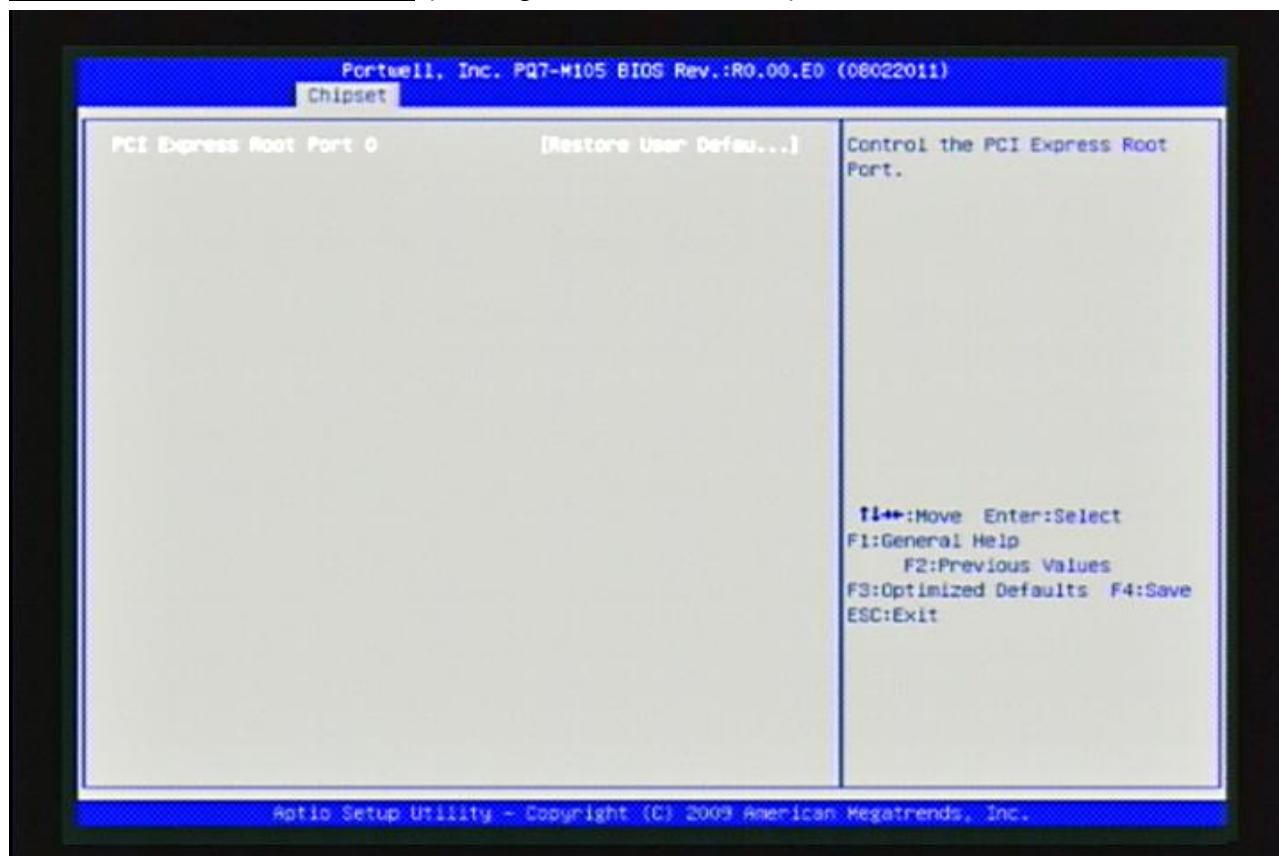
Enables or Disables the High Precision event timer.

Choices: Disabled, Enabled

PCI Express Ports Configuration



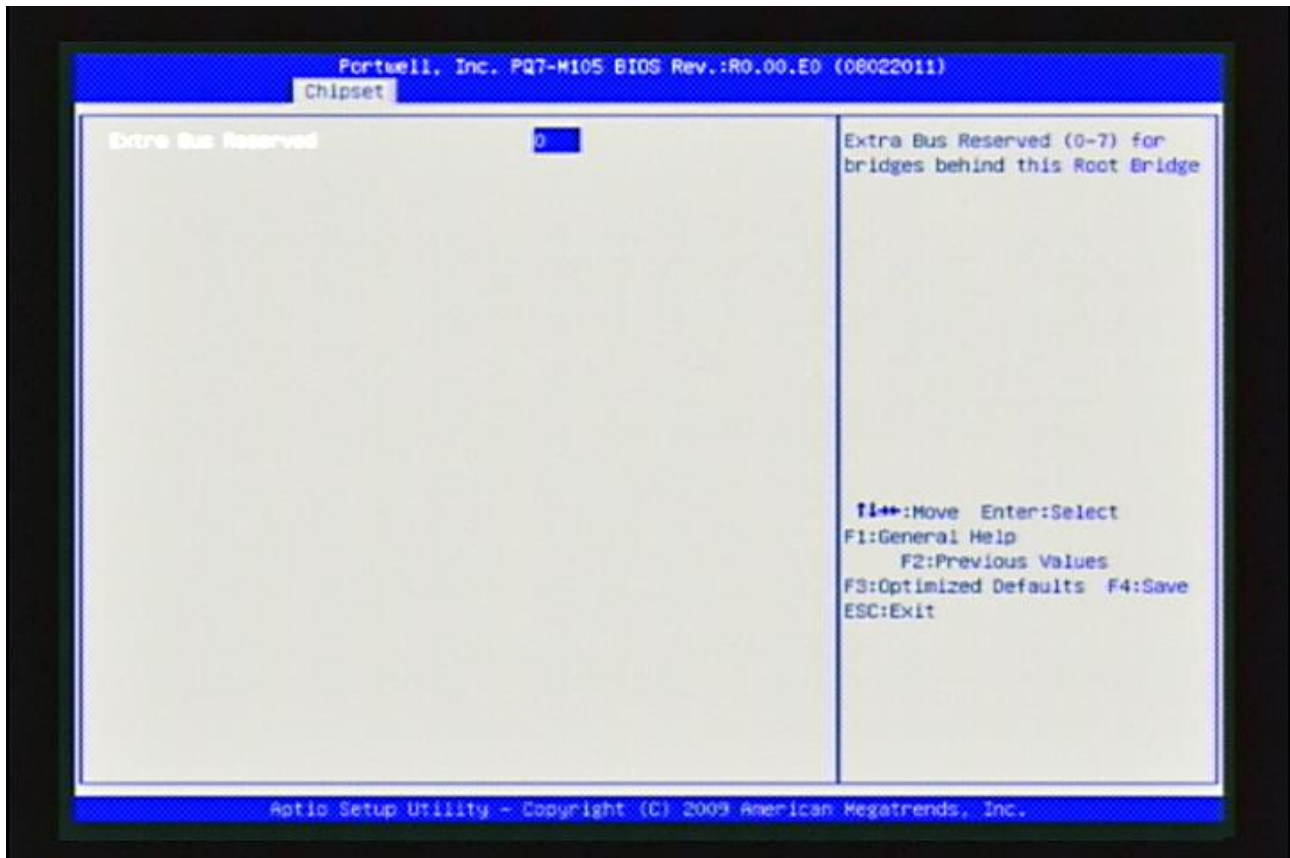
PCI Express Root Port 0~3 (Settings are all the same)



PCI Express Root Port

Choices: Enabled, Disabled

PCI-to-PCI Bridge

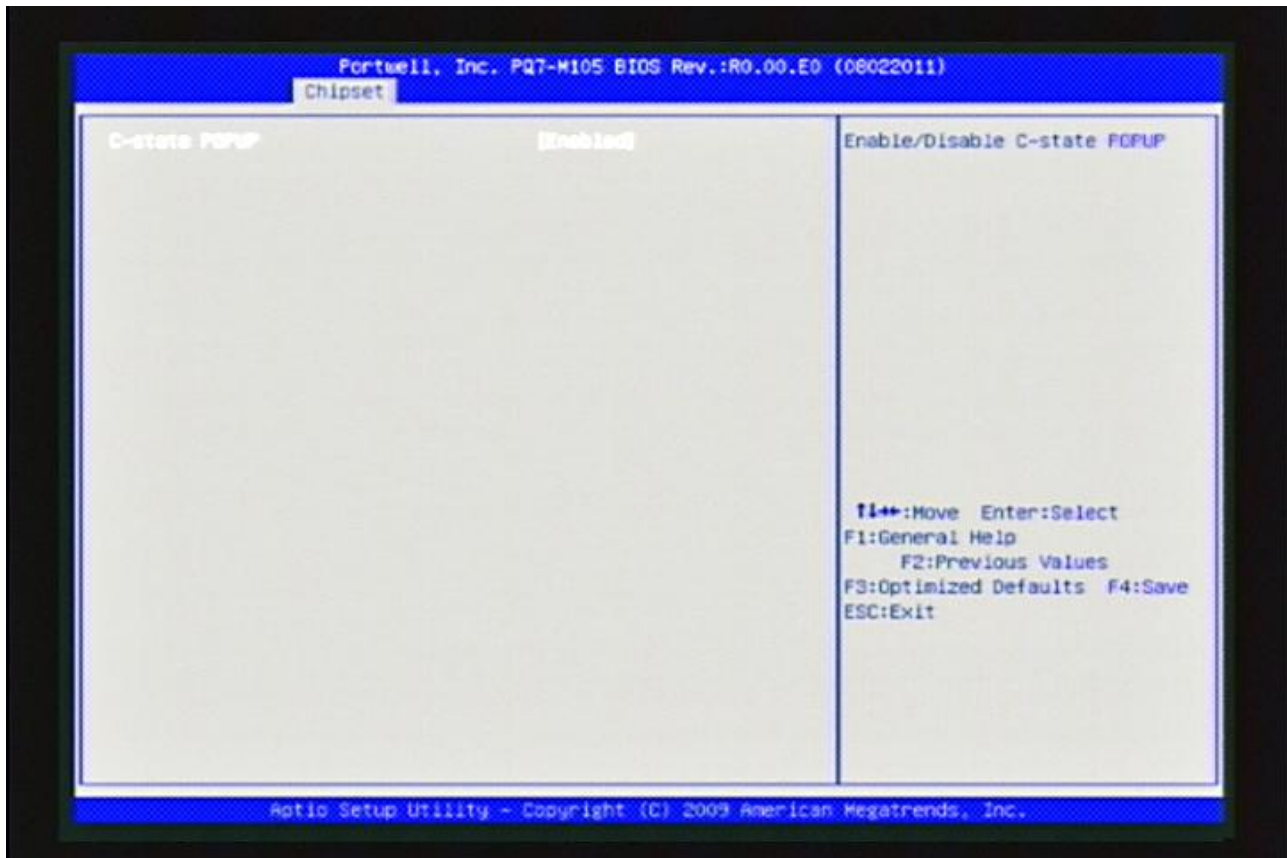


Extra Bus Reserved

Extra Bus reserved (0-7) for bridges behind this Root bridge.

Choices: 0-7

PPM Config



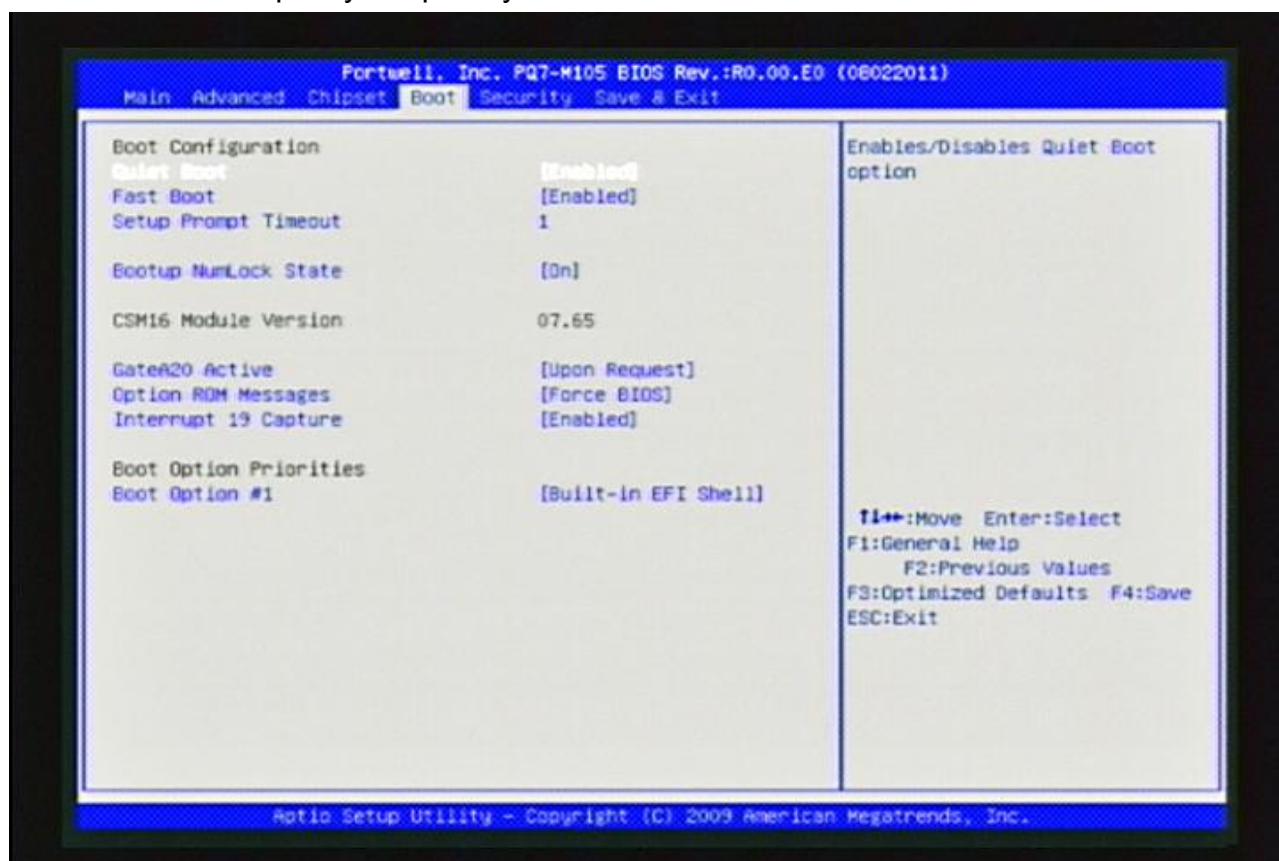
C-State POPUP

Enables or disables C-state POPUP.

Choices: Enabled, Disabled

4.5 Boot

Use this menu to specify the priority of boot devices.



Quiet Boot

This BIOS feature determines if the BIOS should hide the normal POST messages with the motherboard or system manufacturer's full-screen logo. When it is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.

Please note that enabling this BIOS feature often adds 2-3 seconds of delay to the booting sequence. This delay ensures that the logo is displayed for a sufficient amount of time. Therefore, it is recommended that you disable this BIOS feature for a faster boot-up time.

Choices: Disabled, Enabled.

Fast Boot

Enabling this setting will cause the BIOS POST routine to skip some of its tests during boot up for faster system boot.

Choices: Disabled, Enabled.

Setup Prompt Timeout

Choices: 1-65535

Boot Up Num-Lock State

This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

Choices: On, Off.

GateA20 Active

Choices: Upon Request, Always

Option ROM Messages

This item is used to determine the display mode when an optional ROM is initialized during POST. When set to [Force BIOS], the display mode used by AMI BIOS is used. Select [Keep Current] if you want to use the display mode of optional ROM.

Choices: Force BIOS, Keep Current.

Interrupt 19 Capture

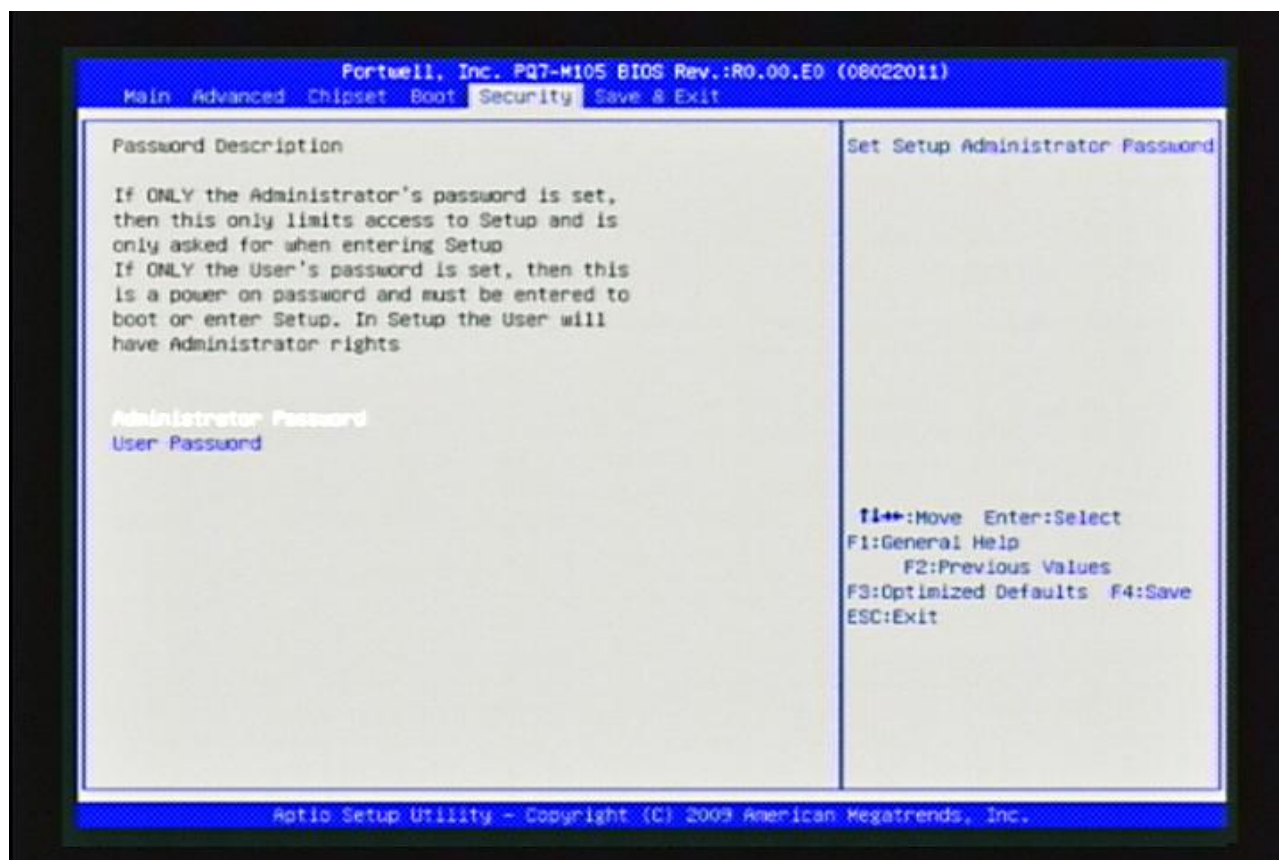
Interrupt 19 is the software interrupt that handles the boot disk function. When enabled, this BIOS feature allows the ROM BIOS of these host adaptors to "capture" Interrupt 19 during the boot process so that drives attached to these adaptors can function as bootable disks. In addition, it allows you to gain access to the host adaptor's ROM setup utility, if one is available.

When it is disabled, the ROM BIOS of these host adaptors will not be able to "capture" the Interrupt 19. Therefore, you will not be able to boot operating systems from any bootable disks attached to these host adaptors. Nor will you be able to gain access to their ROM setup utilities.

Choices: Disabled, Enabled.

4.6 Security

Use this menu to set supervisor and user passwords.



Administrator Password

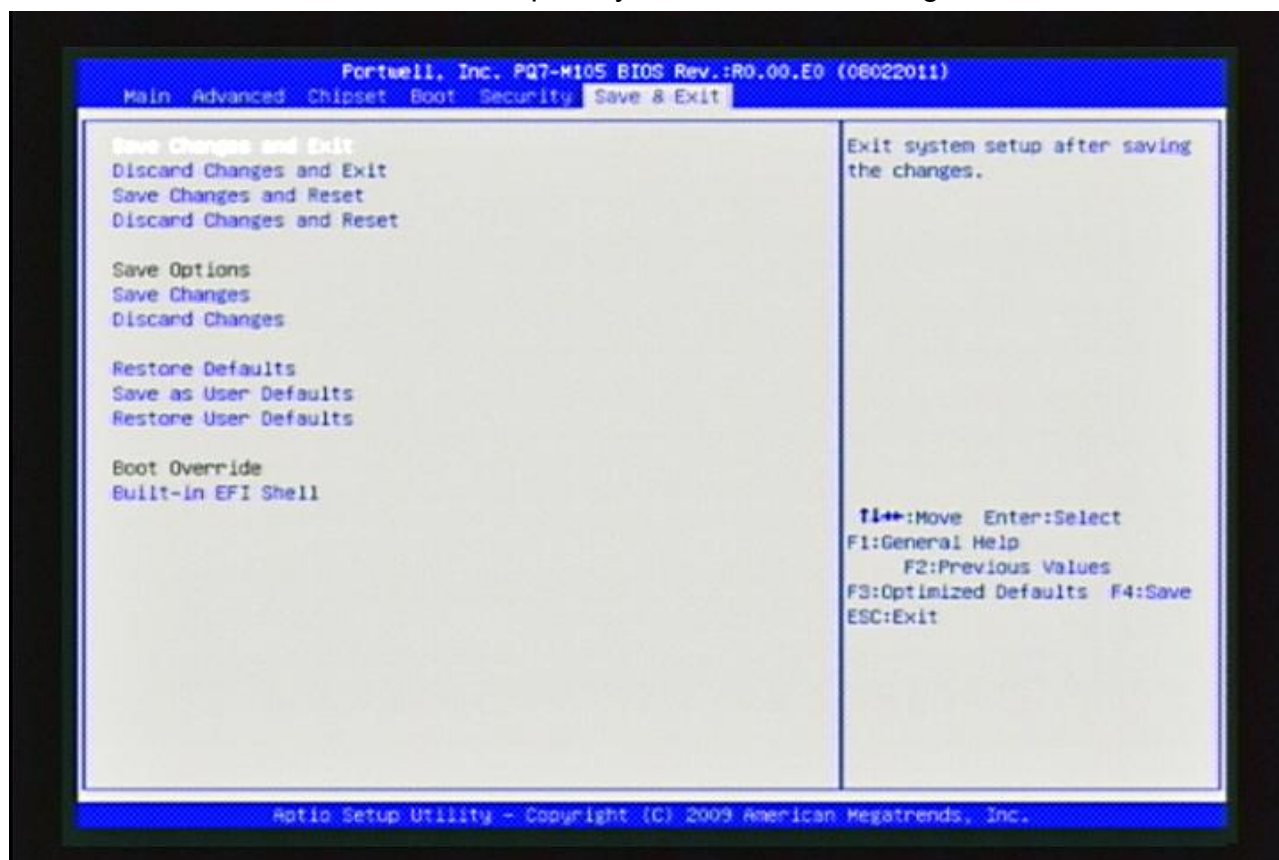
Administrator Password controls access to the BIOS Setup utility. These settings allow you to set or change the supervisor password.

User Password

User Password controls access to the system at boot. These settings allow you to set or change the user password.

4.7 Save & Exit

This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.



Save Changes and Exit

Save Changes and exit the BIOS setup menu.

Discard Changes and Exit

Abandon all changes and exit the Setup Utility.

Save Changes and Reset

Exit System Setup and save your changes to CMOS then reboot.

Save Changes

Save changes but not exit or reset

Discard Changes

Cancel all changes that's been made.

Discard Changes and Reset

Abandon all changes and exit the Setup Utility then reboot

Restore Defaults

Use this menu to load the default values set by the SBC manufacturer specifically for optimal performance of the SBC.

Save as User Defaults

Save all changes and considers as User's default.

Restore User Default

Restore the setting according to User's default

Launch EFI Shell from filesystem device

To enter the Built-in EFI shell for further modification such as upgrade BIOS.

Chapter 5

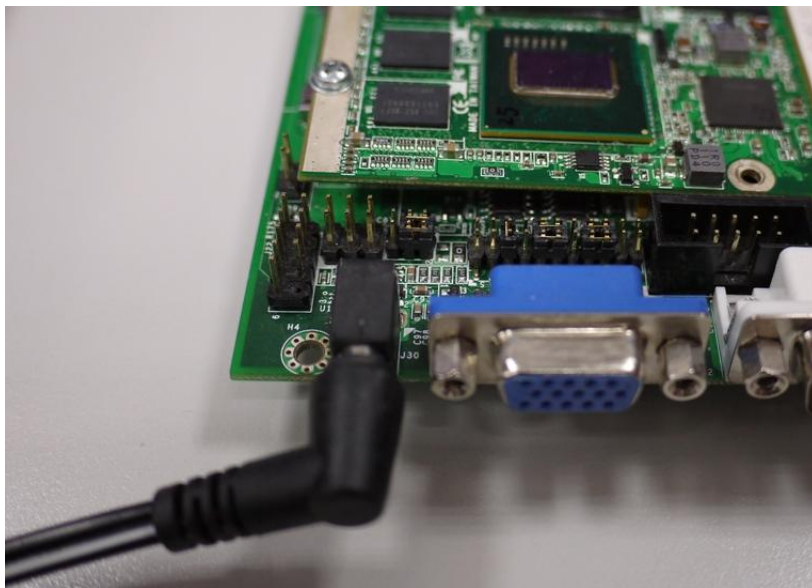
Troubleshooting

This chapter provides a few useful tips to quickly get PQ7-M105 running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

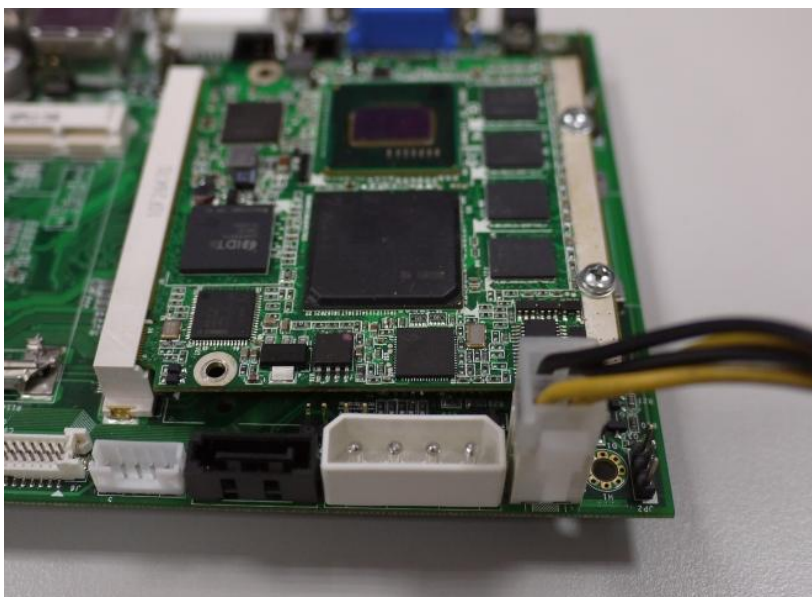
5.1 Hardware Quick Installation

There are two methods to power on PQ7-M105 + PQ7-C100XL-CAN which are **4 Pins DC +12V connector** or **DC +12V IN Jack**.

DC +12V Jack connect to PQ7-C100XL-CAN. (J30)



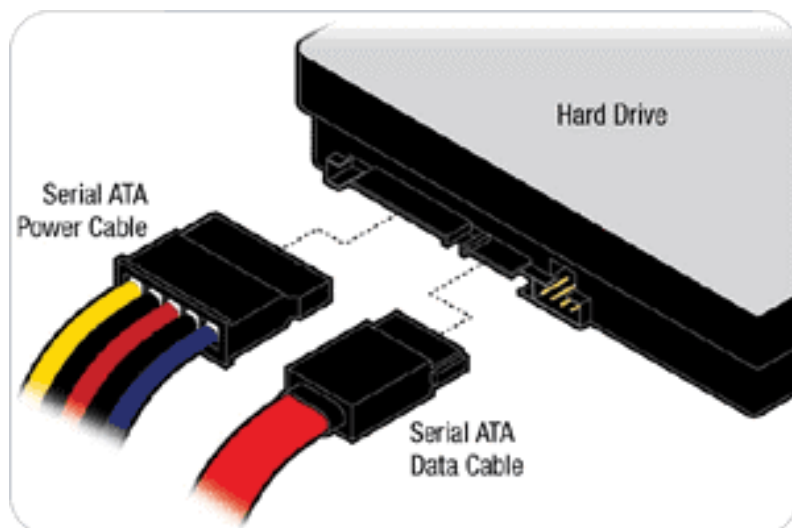
4 Pins directly +12V DC input. (J8)



※ Do NOT connect 4pins DC +12V and DC +12V Jack at the same time.

Serial ATA Hard Disk Setting for IDE

Serial ATA channel can only connect to one SATA hard disk at a time; there are total 2 connectors, J3, J12 (PQ7-C100XL-CAN). The installation of Serial ATA is simpler and easier than IDE because of SATA hard disk doesn't require HDD priority setting jumper, which can reduce mistake of hardware installation. All you need to do is plugging in two cables and choose SATA mode needed in BIOS.



5.2 BIOS Setting

To make sure that you have a successful start with PQ7-M105, it is recommended while going with the boot-up sequence. Hit the “DEL” key and enter the BIOS setup menu to load default setting then tune up a stable BIOS configuration according to your needs.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to “Load Optimal Defaults”, press “Enter” and “Y” to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

Improper disable operation

There are too many occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include the COM1/COM2 ports, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

Disable COM1 serial port to release IRQ #4

Disable COM2 serial port to release IRQ #3

Etc...

A quick review of the basic IRQ mapping is given below for your reference.

Interrupt Request Lines IRQ		
IRQ#	Current Use	Default Use
IRQ 0	System ROM	System Timer
IRQ 1	System ROM	Keyboard Event
IRQ 2	【Unassigned】	Usable IRQ
IRQ 3	【Unassigned】	Usable IRQ
IRQ 4	【Unassigned】	Usable IRQ
IRQ 5	【Unassigned】	Usable IRQ
IRQ 6	System ROM	Diskette Event
IRQ 7	【Unassigned】	Usable IRQ
IRQ 8	System ROM	Real-Time Clock
IRQ 9	【Unassigned】	Usable IRQ
IRQ 10	【Unassigned】	Usable IRQ
IRQ 11	【Unassigned】	Usable IRQ
IRQ 12	System ROM	IBM Mouse Event
IRQ 13	System ROM	Coprocessor Error
IRQ 14	System ROM	Hard Disk Event
IRQ 15	【Unassigned】	Usable IRQ

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers.

5.3 FAQ

Installation Problem

Question: I forget my password of system BIOS, what am I supposed to do?

Answer: You can use CMOS clear jumper on carrier board depending on carrier board design. Or you can remove the Q7 module from socket for a while then plug it back, the setting will restore to default again.

Question: How to update the BIOS file of the PQ7-M105?

Answer:

Please visit web site of the Portwell download center as below hyperlink and register an account. <http://www.portwell.com.tw/support/>

Input your User name and password to log in the download center.

Select the "Search download" to input the keyword "PQ7-M105".

Find the "BIOS" page to download the ROM file and flash utility.

Execute the zip file to root of the bootable USB Pen drive.

Insert your bootable USB Pen drive in PQ7-M105 board and power-on.

Input the "AFUDOS XXXXX.ROM /P /B /N " to start to update BIOS. ("XXXXX" is the file name of the ROM file.)

Switch "Off" the Power Supply when you finished the update process.

Perform a Clear CMOS action.

Switch "ON" the Power Supply then press the "del" key to BIOS to load "Restore Defaults" then save them to exit.

Note:

Please visit our technical web site at <http://www.portwell.com.tw>

For additional technical information, which is not covered in this manual, you can mail to tsd@mail.portwell.com.tw or to our sales for further assistance. Thank you.